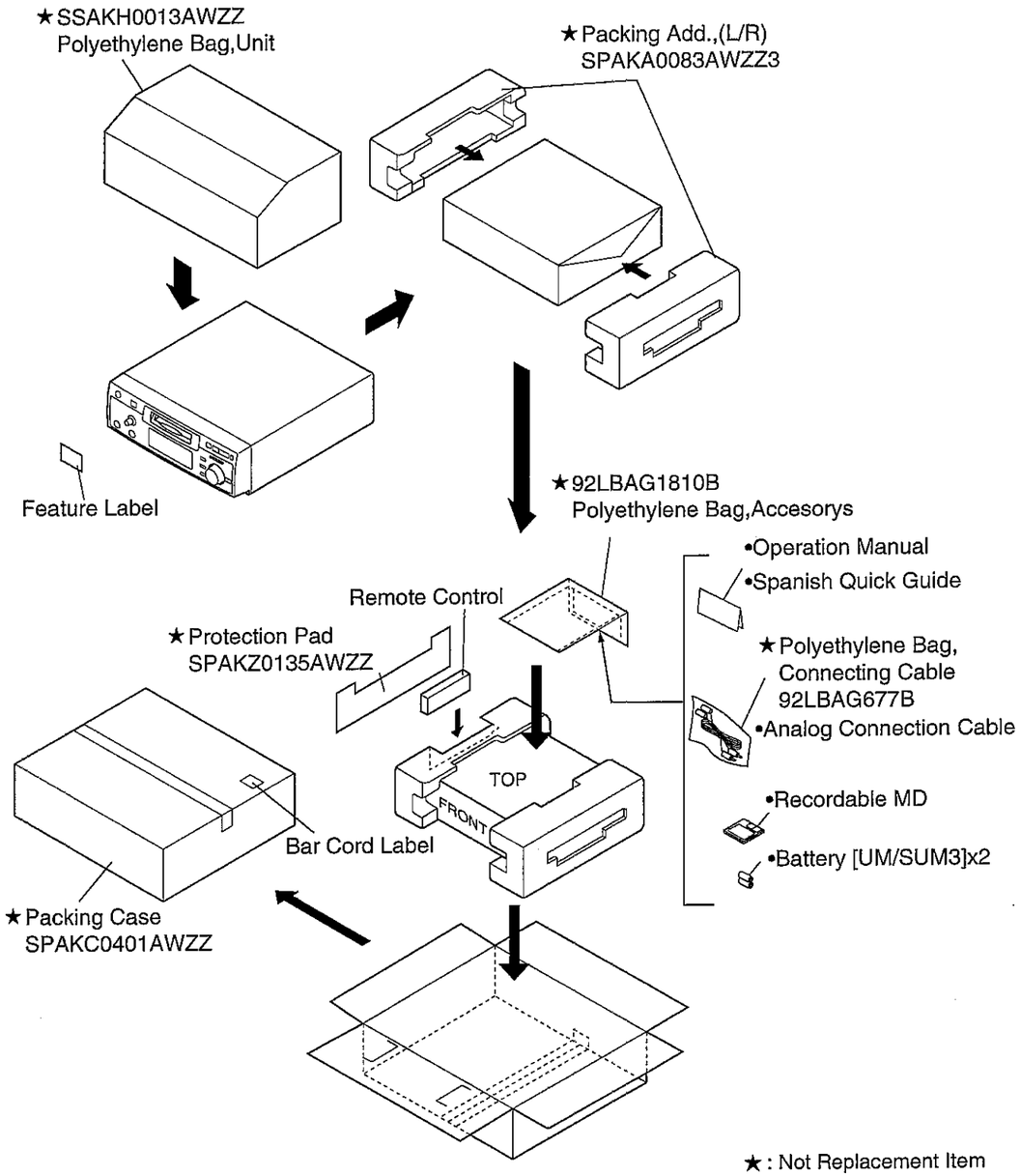
PACKING OF THE SET (FOR MD-R1 ONLY)



★ : Not Replacement Item

Writer and Editor: Quality & Reliability Control Center of Communication & Audio Systems Group, Sharp Corp.

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Printed in Japan
SC • EX• SK

MD-R1/X/E

2x 6/96

SHARP SERVICE MANUAL

No. S7635MDR1/X/E

MD-R1
MD-R1X
MD-R1E

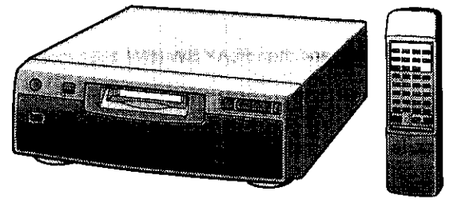

Illustration: MD-R1

• In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION
SHARP ELECTRONICS CORPORATION
Service Headquarters: 1300 Naperville Drive Romeoville, IL 60441

SAFETY PRECATION FOR SERVICE MANUAL (MD-R1E ONLY)

WARNINGS

The ael (ACCESSIBLE EMMISSION LEVEL) of the laser power output is less than class 1 but the laser component is capable of emitting radiation exceeding the limit for class 1. Therefore it is important that the following precautions are observer during servicing to protect your eyes against exposure to the laser beam.

1) When the unit case cover is removed and LOADING SW (SW 1956) is turned on and then PLAY SW (SW 1954 mechanism PWB) is turn on in a few second.
The laser will light for several second to detect a disk.

2) The laser power output of the pickup unit and replacement service parts are all factory pre-set before shipment.
Do not attempt to re-adjust the laser pick-up unit during replacement or servicing.

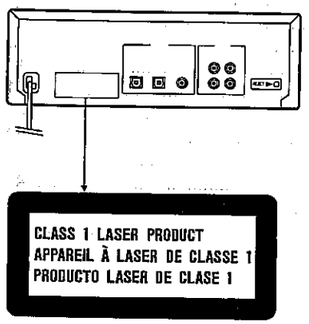
3) Under no circumstances stare into the pickup lens at any time.

4) If laser optical unit becomes faulty, replace the complete laser optical unit.

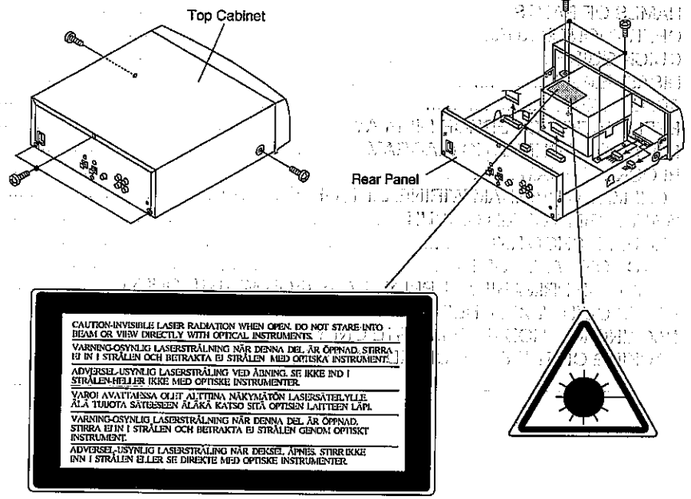
5) CAUTION-USE of controls or adjustments, or pereformance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser Diode Properties

- **Material:** GaAlAs
- **Wavelength:** 785nm
- **Pulse time:** Read mode: 0.8 mW Continuous
  Write mode: max 10 mW 0.5
  min cycle 1.5 S
  Repetition



LASER KLASSE 1
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT
LASER TŘÍDY 1

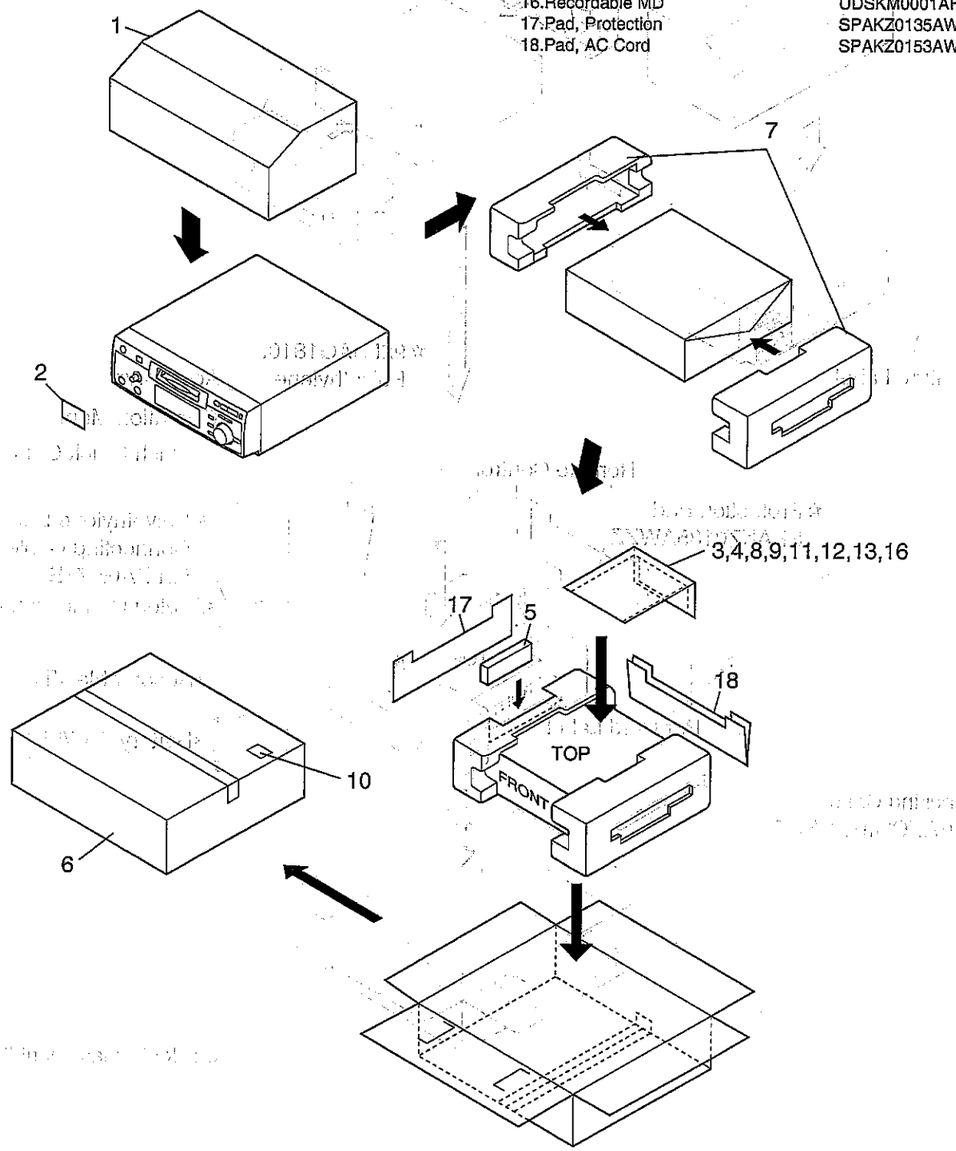

Top Cabinet
Rear Panel
CAUTION-INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN MED OPTISKA INSTRUMENT.
ADVERSEL-USYNLIG LASERSTRÅLING VED ÅBNING, SE IKKE IND I STRÅLEN-HELLER IKKE MED OPTISKE INSTRUMENTER.
VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTÖN LASERSÄTEILYLLE. ÄLÄ TUIOTA SÄTEESEEN ÄLÄKÄ KATSO SITÄ OPTISIN LAITTEEN LÄPI.
VARNING-OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRÅLEN GENOM OPTISKT INSTRUMENT.
ADVERSEL-USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.

VARO !	Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!	Osynlig laserstralning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

PACKING METHOD (FOR MD-R1E ONLY)

SETTIN POSITION OF KNOB	
REC LEVEL	MIN

1. Polyethylene Bag, Unit	SSAKH0013AWZZ
2. Feature Label	TLABM0023AWSA
3. Polyethylen Bag, Accesorys	92LBAG1810B
4. Operation Manual	TINSE0136AWZZ
5. Remote Control	RRMCG0083AWSA
6. Packing Case	SPAKC0403AWZZ
7. Packing Add., (L/R)	SPAKA0083AWZZ3
8. Guranty Card	TGANE0002AWZZ
9. Battery, Remote Control (UM/SUM3)	
10. Label, Bar Cord	TLABE0110AWZZ
11. Analog Connecting Cable x 2	QCNWG0003AWZZ
12. Polyethylene Bag, Connecting Cable	92LBAG667B
13. Registration Card	92LCARD1751A
16. Recordable MD	UDSKM0001AFZZ
17. Pad, Protection	SPAKZ0135AWZZ
18. Pad, AC Cord	SPAKZ0153AWZZ



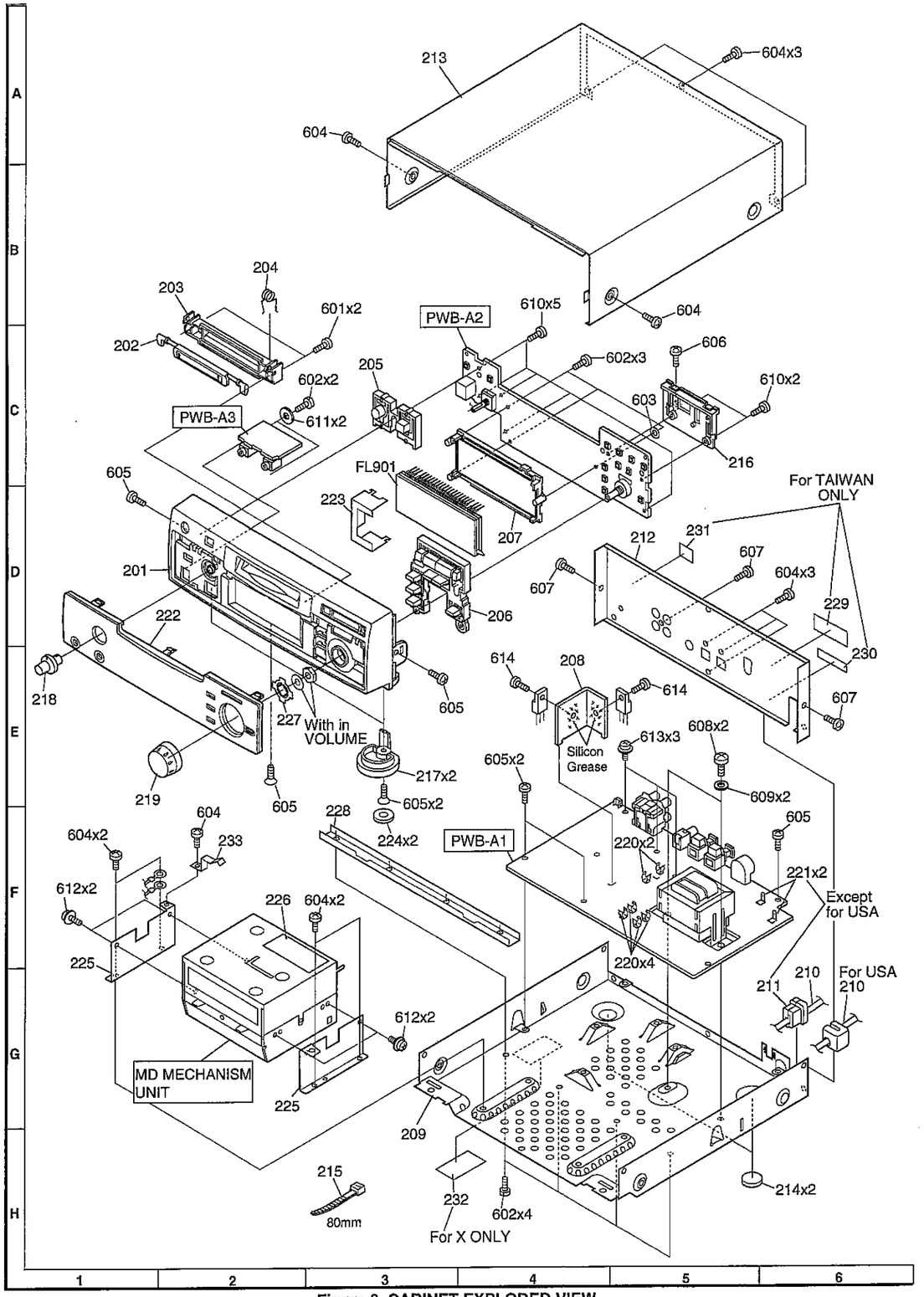


Figure 8 CABINET EXPLODED VIEW

Precaution to be taken when replacing and servicing the laser pickup.
The following precautions must be observed during servicing to protect your eyesagainst exposure to the laser.

Warning of possible eye damage when repairing:
If the AC power plug is connected when the inner cover of the unit is removed, the laser will light up during focus access (about 1 second) (Fig. 3-1).
During this operation, the laser will leak from the opening between the magnetic head and cartridge holder (Fig. 3-2).
In order to protect your eyes, you must not look at the laser during repair.
Before repairing, be sure to disconnect the AC power plug.

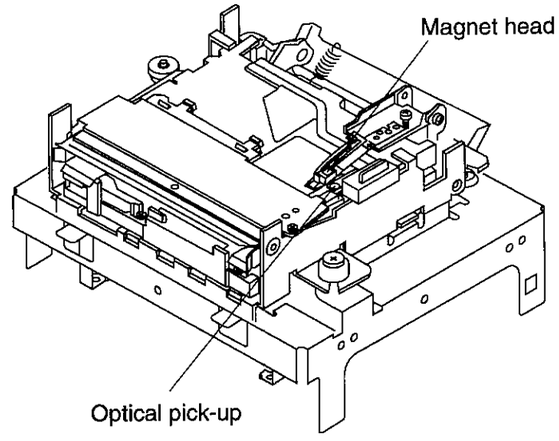


Figure 3-1

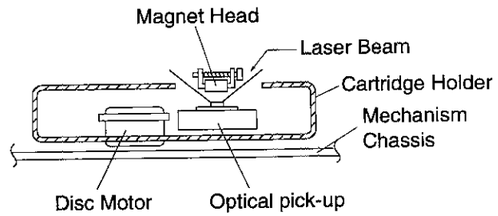


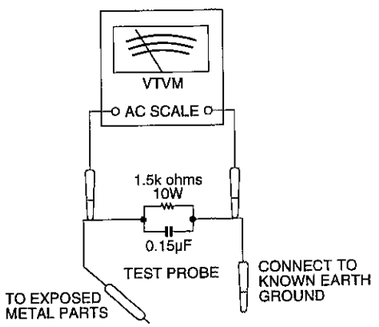
Figure 3-2

IMPORTANT SERVICE NOTES (FOR MD-R1 ONLY)

BEFORE RETURNING THE AUDIO PRODUCT
(Fire & Shock Hazard)
Before returning the audio product to the user, perfrom the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the audio product.
2. Inspect all protective devices such as insulating materials, cabinet, terminalboard, adjustment and compartmentcovers or shields, mechanical insulators etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Pulg the AC line cord directly into a 120 volt AC outlet.
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as conduit or electrical ground connected to earth ground.
- Use a VTVM or VOM with 1000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor (See diagram).
- Connect the resistor connection to all exposed metal parts having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.



All check must be repeated with the AC line cord plug connection reversed.
Any reading of 0.3 volt RMS (this corresponds to 0.2 milliamp. AC.) or more is excessive and indicates a potential shock hazard which must be corrected before returning the audio product to the owner.

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

● General

Type: MiniDisc recorder
Signle readout: Non-contact, semi-conductor laser pick-up
Audio channels: Stereo 2 channels/monaural (long-play mode) 1 channel
Frequency response: 20 to 20,000 Hz (+1/-3 dB)
Rotation speed: Approximately 400 to 900 rpm
Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding: ATRAC (Adaptive TRansform Acoustic Coding)
Recording method: Magnetic modulation overwrite method

Power source: (MD-R1) AC 120 V, 60 Hz
Power source: (MD-R1X) AC 110/127/220/240 V, 50/60 Hz
Power source: (MD-R1E) AC 230 V, 50 Hz
Power consumption: 14 W
Dimensions: Width: 10-11/16" (270 mm)
Height: 3-11/16" (93 mm)
Depth: 12-1/4" (311 mm)
Weight: (MD-R1/E) 7.1 lbs (3.2 kg)
Weight: (MD-R1X) 3.4 kg (7.5 lbs)

Input jacks

Jack name	Jack sharpe	Input impedance	Reference input level	Minimum input level
LINE IN 1 (Front)	1/8" (3.5mm) stereo mini jack	Over 47 kohms	600 mVrms	158 mVrms
LINE IN 2 (Back)	Pin jack	Over 47 kohms	600 mVrms	158 mVrms
OPTICAL IN (Optical)	Square optical connector	——	——	——
COAXIAL (Coaxial)	Pin jack	75 ohms	500 mVp-p	——

Output jacks

Jack name	Jack sharpe	output level	Load impedance
PHONES (Headphones)	1/8" (3.5mm) stereo mini jack	25 mW	32 ohms
LINE OUT	Pin jack	2 Vrms	50 kohms
OPTICAL OUT (Optical)	Square optical connector	——	——

A/D,D/A converter: 1-bit
Sampling frequency: 44.1kHz
Wow and flutter: Unmeasurable (less than ±0.001% W.peek)
Signal/noise ratio: 98 dB or better during playback (line output)

● Remote control

Power: DC 3V ("AA" (UM?SUM-3, R6, HP-7 or similar) battery included x 2)

●Timer/clock

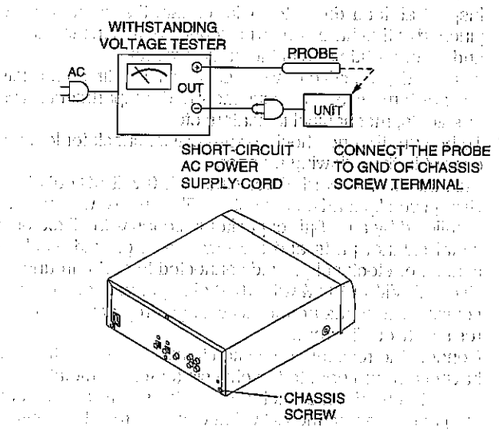
Type: Digital clock with date function
Timer: ON/OFF, once a day

Specifications for this model are subject to change without prior notice.

IMPORTANT SERVICE NOTES (FOR MD-R1E ONLY)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.
Setting of Withstanding Voltage Tester and set.

Set name	Set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current (Cutoff current)	4 mA
Unit	
Judgment	
OK: The "GOOD" lamp lights. NG: The "NG" lamp lights and the buzzor sounds.	



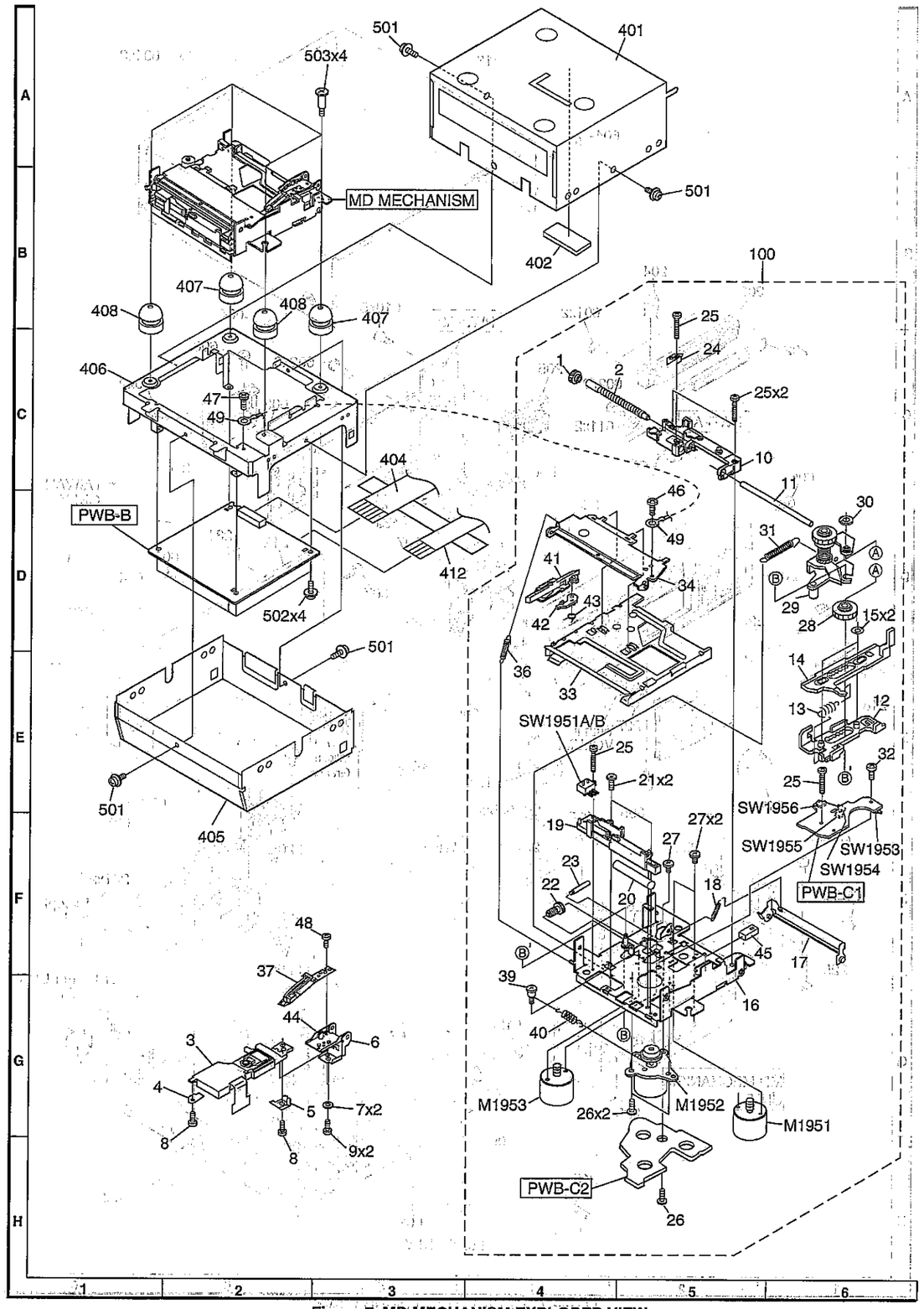


Figure 7 MD MECHANISM EXPLODED VIEW

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
225	LANGK0035AWFW	J	AF	Bracket,MD Unit
226	TCAUS0028AWZZ	J		Caution Label,Class 3B [Except for USA]
227	PGIDI0001AWZZ	J	AC	Guide,Jog Knob
228	LANGF0016AWFW	J	AG	Bracket,Reinforcement
229	TSPC-0384AWZZ	J		Label,Specifications [For Taiwan Only]
230	TLABZ0321AWZZ	J		Label,Importer [For Taiwan Only]
231	TCAUS0029AWZZ	J		Label,Caution [For Taiwan Only]
232	92LLABL1420A1	J	AC	Label,CLASS 1 [For X Only]
233	MSPRP0009AWFJ	J		Spring Earth
601	XEBSD26P10000	J	AA	Screw,ø2.6×10mm
602	XEBSD30P10000	J	AA	Screw,ø3×10mm
603	XWHFZ32-05070	J	AA	Washer,ø3.2×ø7×0.5mm
604	XJBSF30P10000	J	AA	Screw,ø3×10mm
605	XJBSD30P10000	J	AA	Screw,ø3×10mm
606	XJBSD30P06000	J	AA	Screw,ø3×6mm
607	XEBSF30P10000	J	AA	Screw,ø3×10mm
608	XHBSD40P08000	J	AA	Screw,ø4×8mm
609	XWSSD40-11000	J	AA	Washer,ø4mm
610	XEBSD30P12000	J	AA	Screw,ø3×12mm
611	XWHSD32-10130	J	AA	Washer,ø3.2×ø13×1.0mm
612	XBPSD20P08KS0	J	AA	Screw,ø2×8mm
613	LX-JZ0010AFFD	J	AA	Screw,ø3×10mm
614	XJBSD30P08000	J	AA	Screw,ø3×8mm

ACCESSORIES/PACKING PARTS

1	SSAKH0013AWZZ	J	AE	Polyethylene Bag,Unit
2	TLABM0023AWSA	J	AD	Feature Label
3	92LBAG1810B	J	AA	Polyethylene Bag,Accesories
4	TINSE0132AWZZ	J	AH	Operation Manual [For USA]
4	TINSE0136AWZZ	J	AH	Operation Manual [For E]
4	TINSZ0165AWZZ	J		Operation Manual [For X]
5	RRMCG0049AWSA	J	AX	Remote Control [For USA]
5	RRMCG0083AWSA	J	AX	Remote Control [Except for USA]
5-1	92LLID1810A	J	AQ	Lid,Remote Control [Except for USA]
5-1	92LLID1810D	J	AQ	Lid,Remote Control [For USA]
6	SPAKC0401AWZZ	J	AP	Packing Case [For USA]
6	SPAKC0403AWZZ	J	AP	Packing Case [For E]
6	SPAKC0404AWZZ	J		Packing Case [For X]
7	SPAKA0083AWZZ3	J	AG	Packing Add. (L/R)
8	TGANE0002AWZZ	J	AB	Guranty Card [For E Only]
9	———		—	Battery,Remote Control (UM/SUM 3) (Not Replacement Item)
10	TLABE0110AWZZ	J		Label,Bar Cord [For E]
10	TLABR0818AWZZ	J	AB	Label,Bar Cord [For USA]
11	QCNWG0003AWZZ	J	AN	Analog Connecting Cable×2
12	92LBAG667B	J	AC	Polyethylene Bag [Connecting Cable]
13	92LCARD1751A	J	AB	Registration Card [For E Only]
14	TCAUA0012AWZZ	J		Caution Card,Operation Manual [For Taiwan Only]
15	TLSTS0001AWZZ	J		China SS List [For X (Shina Only)]
16	UDSKM0001AFZZ	J	AZ	Recordable MD
17	SPAKZ0135AWZZ	J	AC	Pad,Protection (Remote Control)
18	SPAKZ0153AWZZ	J		Pad,AC Cord [Except for USA]
19	TINSZ0183AWZZ	J		Spanish Quick Guide (For USA)

P.W.B. ASSEMBLY (Not Replacement Item) [FOR UK/USA]

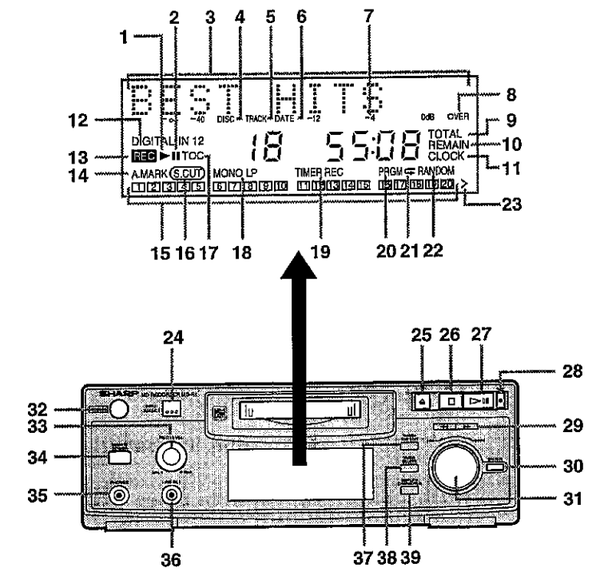
PWB-A1~3	92LPWB2353MANS	J	—	Main/Display/Terminal [For USA] (Combined Ass'y)
PWB-A1~3	92LPWB2355MANS	J	—	Main/Display/Terminal [For E] (Combined Ass'y)
PWB-B	DCYO-2931AF93	J	—	MD Main
PWB-C1,2	DUNTZ0761AF03	J	—	MD Mechanism Switch/Motor (Combined Ass'y)

OTHER SERVICE PARTS

	QCNWK0035AFZZ	J	AN	Extension Cable (24Pin)
	QCNWK0038AFZZ	J	AF	Extension Cable (26Pin)
	QCNWK0059AFZZ	J	AF	Extension Cable (2Pin)
	QCNWK0060AFZZ	J	AH	Extension Cable (5Pin)
	QCNWK0061AFZZ	J	AK	Extension Cable (5Pin)
	QCNWK0086AFZZ	J	AM	Extension Cable (8Pin)
	RRCDT0101AFZZ	J	CB	Test Disc,Low Reflection
	RRCDT0103AFZZ	J	BK	Head Adjusting Transparend Disc
	RUNTK0385AFZZ	J	BS	Extension PWB
	UDSKM0001AFZZ	J	AZ	Recording Mini Disc

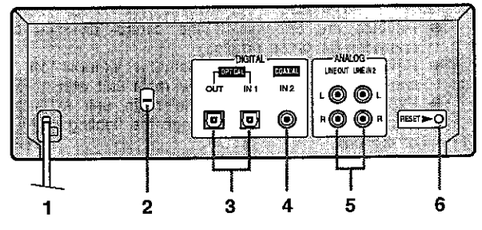
NAME OF PARTS

■ Front panel



1. Play Indicator: ►
2. Pause Indicator: ❚❚
3. Level Meter/Character Information Display
4. Disc Name Indicator
5. Track Indicator
6. Date Indicator
7. Recording Level Indicator
8. Recording Level Too High Indicator
9. Total Time Indicator
10. Remaining Time Indicator
11. Clock Indicator
12. Input Type Display
13. Record Indicator: REC
14. Auto Mark Indicator
15. Music Calendar
16. Space Cut Indicator
17. TOC Indicator: TOC
18. Monaural Long-Play Mode Indicator
19. Timer Playback/Timer Recording Indicator
20. Programme Indicator
21. Repeat Indicator: ⮌
22. Random Indicator
23. More Tracks Indicator
24. Input Select Button
25. Eject Button: ▲
26. Stop Button: ■
27. Play/Pause Button: ►❚❚
28. Record Button: ●
29. Cue/Review Button: ◄◄ / ►►
30. Enter Button
31. Jog Dial (Next/Previous)
32. Power Switch
33. Record Level Control
34. Remote Sensor
35. Headphone Socket
36. Line 1 In Socket (Analogue)
37. Name•TOC Edit Button
38. Timer/Delete Button
39. Display/Character Button

■ Rear panel



1. AC Power Lead
2. AC Voltage Selector (MD-R1 Only)
3. Optical Sockets (Digital 1 In/Out)
4. Coaxial Socket (Digital 2 In)
5. Analogue Sockets (Analogue 2 In/Out)
6. Reset Button

TROUBLESHOOTING

■ If a problem occurs

If this unit functions abnormally during operation, first check the following items. If the unit continues to function abnormally, or if an abnormality appears other than listed below, turn off the player's power and disconnect the AC power plug, then consult your SHARP dealer or service personnel.

General

SYMPTOM	POSSIBLE CAUSE	REMEDY
The clock is wrong.	Did a power failure occur?	Try setting it again.
When a button is pressed, the unit does not respond.		Turn the power off and on again, and then retry the operation.
Radios make unusual noise or the picture on the TV screen is distorted.	When a radio or TV which uses an indoor aerial is placed near the unit, the picture on the TV screen may be distorted or the radio may not function properly.	It is recommended that you use an outdoor aerial.

Audio

A recording cannot be made.	Is the MiniDisc protected against accidental erasure?	Slide the accidental erase prevention tab back to its original position.
	Did you try to make recording on a playback-only MiniDisc?	Replace it with a recordable disc.
	Can you see the "TOC FULL" message in the display?	Put in another recordable disc with recording space on it.
Even though a disc has been loaded, "no disc" or "Error" is displayed.	The disc is very dirty.	Clean the disc.
Playback stops in the middle of a track, or playback is not performed properly.	Is the unit located near excessive vibrations?	Place the unit on a firm, level surface free from vibration.
Playback sounds are skipped.	Has condensation formed inside the unit?	Remove the disc and leave the power turned on. The unit should function properly in about 1 hour.

Remote control

SYMPTOM	POSSIBLE CAUSE	REMEDY
The remote control does not function or does not operate properly.	The batteries (polarity) are not inserted properly.	Insert properly.
	The batteries inside the remote control are dead.	Replace the batteries.
	The remote control is operated from an incorrect distance or angle.	Operate it within a range of 0.2 m (8") to 6 m (20') and within an angle of 15° to either side of centre.
	No disc has been loaded.	Load a disc.
The power cannot be turned on from the remote control.	Is the AC power lead plugged in?	Connect the AC power lead.

(Continued)

■ Moisture condensation

In the following cases, condensation may form inside the unit.

- Shortly after turning on a heater.
- When the unit is placed in a room where there is excessive steam or moisture.
- When the unit is moved from a cool place to a warm place.

When the unit has condensation inside, the disc signals cannot be read, and the product may not function properly.

- If this happens, remove the disc, and open the disc holder. The condensation should evaporate in approximately 1 hour. The unit will then function properly.

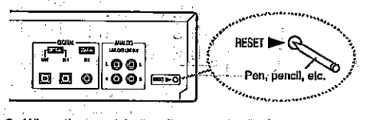
■ If a power failure occurs during recording

If the AC power plug is disconnected from the AC socket or a power failure occurs during recording (before the TOC information has been recorded on the disc), the audio portion being recorded at that time will be erased. When a recording is being added to a MiniDisc which already has a recording on it, if the TOC is not updated before the power failure, the added recording will be erased.

■ If a problem occurs

If this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.) or if it is operated incorrectly, it may malfunction or the display may not function correctly. If such a problem occurs, do the following:

Unplug the AC power lead from the AC socket.
Wait about 20 - 30 seconds and then plug the AC power lead back into the AC socket.
Press the reset button on the back of the unit.



- When the reset button is pressed, all of the settings in memory will be erased.
- If strange sounds, smells or smoke come out of the unit or if a foreign object falls into the unit, turn off the power, unplug the AC power lead from the AC socket, immediately. Contact the shop where you purchased the unit.

MINIDISC SYSTEM LIMITATIONS

Even if the maximum recording time of a MiniDisc has not been reached, "DISC FULL" or "TOC FULL" may be displayed.	When the number of tracks used reaches the limit, regardless of the remaining recording time, further recording will be impossible. (Maximum number of tracks: 254)
Even if the number of tracks and the recording time have not reached the limit, "DISC FULL" may be displayed.	When emphasis information (equalizer treatment in the treble section) in a track switches on/off lots of times, each change is assumed to be the beginning of a new track, which will quickly use up all available track numbers and further recording will be impossible, regardless of the remaining recording time or the number of tracks on the original.
Even if several short tracks are erased, the remaining recording time may not show an increase.	When the remaining recording time of a disc is displayed, short tracks less than 8 seconds long may not be included in the total.
Two tracks may not be combined in editing.	For MiniDiscs on which repeated recording and editing operations were performed, the COMBINE function may not work.
The total of the recorded time and time remaining on a disc may not add up to the maximum possible recording time.	A cluster (about 2 seconds) is normally the minimum unit of recording. So, even if a track is less than 2 seconds long, it will use about 2 seconds of space on the disc. Therefore, the time actually available for recording may be less than the remaining time displayed. If there are scratches on discs, those sections will be automatically avoided (no recording will be placed in those sections). Therefore, the recording time will be reduced.

RESISTORS

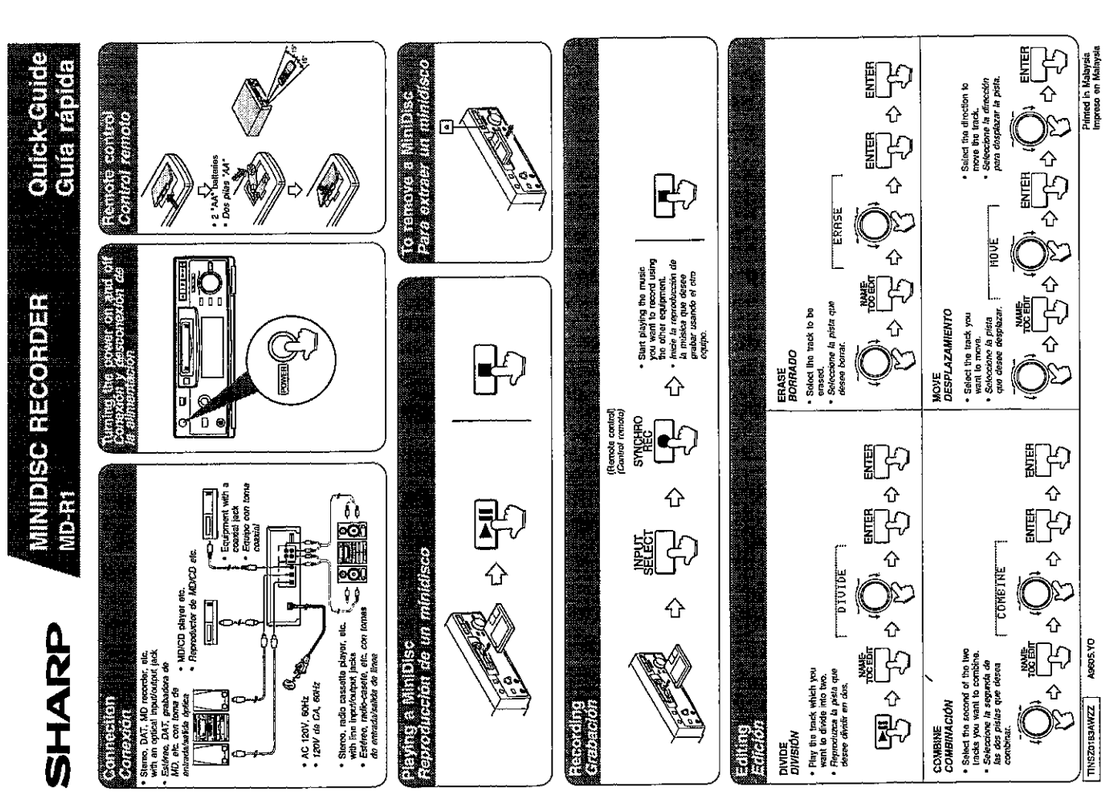
NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R101,102	VRS-TQ2BB000J		AA	0 ohm,Jumper,1.55x3.1mm, Green
R103,104	VRD-MN2BD273J		AA	27 kohms,1/8W
R107,108	VRD-MN2BD102J		AA	1 kohm,1/8W
R109	VRD-MN2BD821J		AA	820 ohms,1/8W
R110	VRS-ST2CD101J		AA	100 ohm,1/8W
R111,112	VRD-MN2BD104J		AA	100 kohm,1/8W
R113-116	VRD-MN2BD102J		AA	1 kohm,1/8W
R117,118	VRD-MN2BD822J		AA	8.2 kohms,1/8W
R119	VRS-ST2CD101J		AA	100 ohm,1/8W
R120	VRD-MN2BD101J		AA	100 ohm,1/8W
R221	VRD-MN2BD102J		AA	1 kohm,1/8W
R222	VRD-MN2BD101J		AA	100 ohm,1/8W
R301	VRD-MN2BD820J		AA	82 ohms,1/8W
R302	VRD-MN2BD331J		AA	330 ohms,1/8W
R303	VRD-MN2BD224J		AA	220 kohms,1/8W
R304	VRD-MN2BD272J		AA	2.7 kohms,1/8W
R305	VRD-MN2BD563J		AA	56 kohms,1/8W
R307,308	VRD-MN2BD220J		AA	22 ohms,1/8W
R309	VRD-MN2BD103J		AA	10 kohm,1/8W
R310	VRD-MN2BD332J		AA	3.3 kohms,1/8W
R311	VRD-MN2BD220J		AA	22 ohms,1/8W
R312	VRD-MN2BD474J		AA	470 kohms,1/8W
R313	VRD-ST2CD473J		AA	47 kohms,1/8W
R350	VRD-MN2BD102J		AA	1 kohm,1/8W
R351	VRD-MN2BD122J		AA	1.2 kohms,1/8W
R352	VRD-ST2CD182J		AA	1.8 kohms,1/8W
R353	VRD-MN2BD102J		AA	1 kohm,1/8W
R354	VRD-MN2BD122J		AA	1.2 kohms,1/8W
R355	VRD-ST2CD182J		AA	1.8 kohms,1/8W
R356	VRD-MN2BD222J		AA	2.2 kohms,1/8W
R357	VRD-ST2CD392J		AA	3.9 kohms,1/8W
R358	VRD-MN2BD102J		AA	1 kohm,1/8W
R409	VRD-ST2CD331J		AA	330 ohms,1/8W
R410	VRD-MN2BD331J		AA	330 ohms,1/8W
R502	RH-QX1067AFZZ		AE	Posistor,8.2 ohms
R503	VRD-MN2BD182J		AA	1.8 kohms,1/8W
R504	VRD-MN2BD333J		AA	33 kohms,1/8W
R509	VRD-MN2BD101J		AA	100 ohm,1/8W
R510	VRD-MN2BD681J		AA	680 ohms,1/8W
R514	RH-QX1067AFZZ		AE	Posistor,8.2 ohms
R515	VRD-MN2BD182J		AA	1.8 kohms,1/8W
R517,518	VRS-ST2EE221J		AA	220 ohms,1/4W
R520	VRD-MN2BD104J		AA	100 kohm,1/8W
R521	VRD-MN2BD224J		AA	220 kohms,1/8W
R522	VRD-MN2BD103J		AA	10 kohm,1/8W
R523	VRD-MN2BD183J		AA	18 kohms,1/8W
R551	RH-QX1067AFZZ		AE	Posistor,8.2 ohms
R560	VRD-MN2BD681J		AA	680 ohms,1/8W
R600	VRD-ST2CD102J		AA	1 kohm,1/6W
R601,602	VRD-MN2BD123J		AA	12 kohms,1/8W
R603,604	VRD-MN2BD103J		AA	10 kohm,1/8W
R605	VRD-MN2BD473J		AA	47 kohms,1/8W
R608	VRD-MN2BD273J		AA	27 kohms,1/8W
R611,612	VRD-MN2BD104J		AA	100 kohm,1/6W
R613,614	VRD-MN2BD104J		AA	100 kohm,1/6W
R615	VRD-ST2CD101J		AA	100 ohm,1/6W
R616	VRD-MN2BD393J		AA	39 kohms,1/8W
R617	VRD-MN2BD474J		AA	470 kohms,1/8W
R619	VRD-MN2BD222J		AA	2.2 kohms,1/8W
R621,622	VRD-MN2BD222J		AA	2.2 kohms,1/8W
R623,624	VRD-MN2BD104J		AA	100 kohm,1/8W
R625,626	VRD-MN2BD102J		AA	1 kohm,1/8W
R627,628	VRD-MN2BD103J		AA	10 kohm,1/8W
R629,630	VRD-MN2BD223J		AA	22 kohms,1/8W
R631,632	VRD-ST2EE180J		AA	18 ohms,1/4W
R633,634	VRD-MN2BD473J		AA	47 kohms,1/8W
R635,636	VRD-ST2CD101J		AA	100 ohm,1/6W
R637,638	VRD-ST2EE180J		AA	18 ohms,1/4W
R701	VRD-MN2BD473J		AA	47 kohms,1/8W
R702	VRD-MN2BD101J		AA	100 ohm,1/8W
R706	VRD-ST2CD101J		AA	100 ohm,1/6W
R709	VRD-ST2CD103J		AA	10 kohm,1/6W
R711	VRD-MN2BD222J		AA	2.2 kohms,1/8W
R712	VRD-ST2CD222J		AA	2.2 kohms,1/6W
R713,714	VRD-MN2BD103J		AA	10 kohm,1/8W
R753,754	VRD-MN2BD333J		AA	33 kohms,1/8W
R755,756	VRD-ST2CD331J		AA	330 ohm,1/6W
R757,758	VRD-MN2BD101J		AA	100 ohm,1/8W
R937	VRD-MN2BD182J		AA	1.8 kohms,1/8W
R938	VRD-ST2CD475J		AA	4.7 Mohms,1/8W
R943-952	VRD-ST2CD473J		AA	47 kohms,1/8W
R953-958	VRD-MN2BD473J		AA	47 kohms,1/8W
R960	VRD-MN2BD123J		AA	12 kohms,1/8W
R961	VRD-MN2BD104J		AA	100 kohm,1/8W (For USA)
R961	VRD-MN2BD153J		AA	15 kohms,1/8W (For E)
R961	VRD-MN2BD223J		AA	22 kohms,1/8W (For X)
R963	VRD-MN2BD105J		AA	1 Mohm,1/8W
R965	VRD-MN2BD224J		AA	220 kohms,1/8W
R966,967	VRD-MN2BD103J		AA	10 kohm,1/8W
R968-970	VRD-MN2BD822J		AA	8.2 kohms,1/8W
R984	VRD-MN2BD103J		AA	10 kohm,1/8W
R986	VRD-MN2BD474J		AA	470 kohms,1/8W
R987	VRD-MN2BD103J		AA	10 kohm,1/8W
R988	VRD-ST2CD103J		AA	10 kohm,1/6W
R995	VRD-MN2BD103J		AA	10 kohm,1/8W
R996	VRD-MN2BD106J		AA	1 kohm,1/8W
R1000	VRS-TQ2BB120J		AA	12 ohms,1/8W
R1100	VRS-TQ2BB150J		AA	15 ohms,1/8W
R1110	VRS-CYJB104J		AA	100 kohm,1/16W
R1111	VRS-CYJB123J		AA	12 kohms,1/16W
R1112	VRS-CYJB100J		AA	10 ohm,1/16W
R1114	VRS-CYJB223J		AA	22 kohms,1/16W
R1115	VRS-CYJB473J		AA	47 kohms,1/16W
R1116	VRS-CYJB100J		AA	10 ohm,1/16W
R1117	VRN-CYJD124D		AA	120 kohms,1/16W
R1118	VRS-CYJB123J		AA	12 kohms,1/16W
R1119	VRS-CYJB104J		AA	100 kohm,1/16W
R1120	VRS-CYJB223D		AA	22 kohms,1/16W
R1121	VRN-CYJD223D		AA	22 kohms,1/16W
R1122	VRN-CYJD124D		AA	120 kohms,1/16W
R1123	VRS-CYJB123J		AA	12 kohms,1/16W
R1124	VRS-CYJB100J		AA	10 ohm,1/16W
R1125	VRS-CYJB104J		AA	100 kohm,1/16W
R1126	VRS-CYJB100J		AA	10 ohm,1/16W
R1127	VRN-CYJD224D		AA	220 kohms,1/16W
R1128	VRS-CYJB123J		AA	12 kohms,1/16W
R1129, 1130	VRN-CYJD473D		AA	47 kohms,1/16W
R1131	VRN-CYJD224D		AA	220 kohms,1/16W
R1132	VRS-CYJB100J		AA	10 ohm,1/16W
R1133	VRS-CYJB123J		AA	12 kohms,1/16W
R1134, 1135	VRS-CYJB393J		AA	39 kohms,1/16W
R1136	VRS-CYJB471J		AA	470 ohms,1/16W
R1140	VRS-CYJB1R0J		AA	1 ohm,1/16W
R1141	VRS-CYJB102J		AA	1.2 kohms,1/16W
R1142	VRS-CYJB102J		AA	1.2 kohms,1/16W
R1143	VRS-CYJB102J		AA	1.2 kohms,1/16W
R1144	VRS-CYJB391J		AA	390 ohms,1/16W
R1145	VRS-CYJB335J		AA	3.3 Mohms,1/16W
R1146, 1148	VRS-CYJB104J		AA	100 kohm,1/16W
R1147, 1149	VRS-CYJB393J		AA	39 kohms,1/16W
R1153	VRS-CYJB184J		AA	180 kohms,1/16W
R1154	VRS-CYJB103J		AA	10 kohm,1/16W
R1155	VRS-CYJB224J		AA	220 kohms,1/16W
R1156	VRS-CYJB124J		AA	120 kohms,1/16W
R1157	VRS-CYJB561J		AA	560 ohms,1/16W
R1158	VRS-CYJB683J		AA	68 kohms,1/16W
R1158, 1160	VRS-CYJB473J		AA	47 kohms,1/16W
R1161	VRS-CYJB221J		AA	220 ohms,1/16W
R1162	VRS-CYJB222J		AA	2.2 kohms,1/16W
R1163	VRS-CYJB153J		AA	15 kohms,1/16W
R1164	VRS-CYJB103J		AA	10 kohm,1/16W
R1166	VRS-CYJB122J		AA	1.2 kohms,1/16W
R1201	VRS-CYJB151J		AA	150 ohms,1/16W
R1202	VRS-CYJB105J		AA	1 Mohm,1/16W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
C532	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C551~554	VCKZPU1HF473Z	J	AA	0.047 µF,50V
C560	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C561,562	RC-GZA476AF1E	J	AB	47 µF,25V,Electrolytic
C567	RC-GZA476AF1A	J	AB	47 µF,10V,Electrolytic
C571	VCKZPU1HF103Z	J	AA	0.01 µF,50V
C601	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C603,604	RC-GZA474AF1H	J	AA	0.47 µF,50V,Electrolytic
C606	RC-GZA227AF1A	J	AB	220 µF,10V,Electrolytic
C607	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C608	RC-GZA104AF1H	J	AB	0.1 µF,50V,Electrolytic
C611,612	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C613,614	VCCSMN1HL270J	J	AA	27 pF,50V
C615,616	VCKYMN1HB151K	J	AA	150 pF,50V
C617,618	VCCSMN1HL270J	J	AA	27 pF,50V
C621,622	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C623,624	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C625	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C626	RC-GZA475AF1E	J	AB	4.7 µF,25V,Electrolytic
C701	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C702	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C705	VCCSPA1HL101J	J	AA	100 pF,50V
C706	VCKYBT1HB121J	J	AA	120 pF,50V
C707,708	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C751,752	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C753,754	VCKYMN1HB561K	J	AA	560 pF,50V
C755	VCKZPU1HF473Z	J	AA	0.047 µF,50V
C757,758	VCKYMN1HB102K	J	AA	0.001 µF,50V
C759,760	VCKYMN1HB331K	J	AA	330 pF,50V
C901	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C902	RC-KZ0001AWZZ	J	AD	0.1 µF,25V
C903	VCFYDA1HA104J	J	AB	0.1 µF,50V,Polyester
C904	VCCSMN1HL470J	J	AA	47 pF,50V
C905	VCCCMN1HH120J	J	AA	12 pF (CH),50V
C906	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C907	RC-KZ0001AWZZ	J	AD	0.1 µF,25V
C908	RC-EZD105AF1H	J	AB	1 µF,50V,Electrolytic
C909	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C914~917	VCKYMN1HB102K	J	AA	0.001 µF,50V
C918	VCCSPA1HL121J	J	AA	120 pF,50V
C1100,1101	VCKYTV1CF105Z	J	AB	1 µF,16V
C1104	VCCCCY1HH3R0C	J	AA	3 pF (CH),50V
C1105	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1108,1109	VCCCCY1HH8R0D	J	AA	8 pF (CH),50V
C1110	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1111	VCKYTQ1CB474K	J	AC	0.47 µF,16V
C1112	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1114,1115	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C1120	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1122	VCKYTQ1CB105K	J	AD	1 µF,16V
C1123	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1124	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1125	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1126	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1127	VCKYTV1CF105Z	J	AB	1 µF,16V
C1128	VCKYCY1HB391K	J	AA	390 pF,50V
C1129	VCKYCY1HB331K	J	AA	330 pF,50V
C1130	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C1131	VCKYCY1HB331K	J	AA	330 pF,50V
C1132,1133	VCKYTQ1CB105K	J	AD	1 µF,16V
C1134,1135	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1136,1137	VCKYCY1HB682K	J	AA	0.0068 µF,50V
C1138	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C1139	VCKYTV1CB104K	J	AA	0.1 µF,16V
C1140	VCKYTQ1CB105K	J	AD	1 µF,16V
C1141	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1142,1143	VCKYTQ1CB105K	J	AD	1 µF,16V
C1144	VCCCCY1HH6R0C	J	AA	6 pF (CH),50V
C1145	VCKYCY1CB333K	J	AA	0.033 µF,16V
C1146	VCKYTQ1CB105K	J	AD	1 µF,16V
C1147	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1148	VCCCCY1HH2R0C	J	AA	2 pF (CH),50V
C1201	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C1202	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1203	VCKYTV1CF105Z	J	AB	1 µF,16V
C1204,1205	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C1206	VCKYTV1CF105Z	J	AB	1 µF,16V
C1209,1210	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1211	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1213	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C1214	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1216	VCCCCY1HH470J	J	AA	47 pF (CH),50V

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C1219	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C1251	VCKYCY1CB273K	J	AA	0.027 µF,16V
C1252	VCCCTV1HH121J	J	AA	120 pF (CH),50V
C1253~1255	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1301	VCKYTV1CF105Z	J	AB	1 µF,16V
C1302~1304	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1305	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1306	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C1401	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1403	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C1404	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1405	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1406	VCKYTV1CF105Z	J	AB	1 µF,16V
C1407,1408	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1421~1424	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1460	VCKYTV1CF105Z	J	AB	1 µF,16V
C1601	VCKYTV1CF105Z	J	AB	1 µF,16V
C1602	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1604	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1605	VCEAPS106AF1C	J	AB	10 µF,16V,Electrolytic
C1650,1651	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C1652,1653	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1654,1655	VCKYCY1HB472K	J	AA	0.0047 µF,50V
C1656,1657	VCKYCY1HB562K	J	AA	0.0056 µF,50V
C1658,1659	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1661	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1700	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1701	VCKYTV1CF105Z	J	AB	1 µF,16V
C1702	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1703	VCEAPS476AF0G	J	AC	47 µF,4V,Electrolytic
C1704,1705	VCCCCY1HH181J	J	AA	180 pF (CH),50V
C1706,1707	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1708	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1709	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1710	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1711	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1712	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1713	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1714	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1715	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1716,1717	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1718	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1722	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1724	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1728,1729	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1730	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1733,1734	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1735	VCCSCY1HL821J	J	AA	820 pF,50V
C1736,1737	VCCCCY1HH180J	J	AA	18 pF (CH),50V
C1738	VCCSCY1HL821J	J	AA	820 pF,50V
C1741	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1742,1743	VCEAPS476AF0G	J	AC	47 µF,4V,Electrolytic
C1804	VCKYCY1HB102K	J	AA	1000 pF,50V
C1805	RC-EZ1623AFZZ	J	AF	22 µF,10V,Electrolytic
C1808	VCEAPS107AF1C	J	AC	100 µF,10V,Electrolytic
C1809	VCKYTV1CF105Z	J	AB	1 µF,16V
C1810	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1811	VCCCCY1HH221G	J	AB	220 pF (CH),50V
C1819	RC-EZ1614AFZZ	J	AE	33 µF,6.3V,Electrolytic
C1820	VCKYCY1HB152K	J	AA	0.0015 µF,50V
C1825	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1826	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1827	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1828	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1829	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1830	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1831	VCKYTV1CF105Z	J	AB	1 µF,16V
C1832	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1833	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1834	RC-EZ1634AFZZ	J	AF	15 µF,16V,Electrolytic
C1835	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1836	VCCCCY1HH680J	J	AA	68 pF (CH),50V
C1837	VCKYTV1CF105Z	J	AB	1 µF,16V
C1900	VCKYTQ1CB334K	J	AC	0.33 µF,16V
C1901	VCKYTV1CF105Z	J	AB	1 µF,16V
C1902	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1903	VCKYTV1CF105Z	J	AB	1 µF,16V
C1913	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C1915,1916	VCKYCY1HB102K	J	AA	1000 pF,50V
C1927	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1931	VCKYTV1CF105Z	J	AB	1 µF,16V
C1951	VCKYCY1CB473K	J	AA	0.047 µF,16V

When an error message is displayed, proceed as follows:

Error messages	Meaning	Remedy
NO DISC	● A disc has not been loaded. ● The disc data cannot be read.	● Load a disc. ● Reload the disc.
DISC ERROR	● The disc is damaged or there is no TOC on the disc.	● Reload the disc or replace it.
BLANK MD	● Nothing is recorded.	● Replace the disc with a recorded disc.
00 0:00	● Music is not being recorded.	
? DISC	● The data contains an error.	● Replace the disc with another recordable disc.
TOC ERROR	● The disc has a large amount of damage.	
DISC FULL	● The disc is out of recording space.	
PLAYBACK MD	● You tried to record on a playback-only disc.	● Replace it with a recordable disc.
PROTECTED	● The disc is write protected.	● Move the write protection tab back to its original position.
TOC FULL	● There is no space left for recording character information (track names, disc names, etc.)	● Replace it with another recordable disc.
Can't REC	● Recording cannot be performed correctly due to vibration or shock in the unit.	● Re-record.
Din UNLOCK	● Poor connection of the optical digital cable ● Digital recording was attempted at a sampling frequency other than 44.1 kHz.	● Connect the optical digital cable securely. ● Record using the analogue cable.
Can't COPY	● No copy can be made because of the SCMS copyright system.	● Record using the analogue cable.
Can't EDIT	● A track cannot be edited.	● Change the stop position of the track and then try editing it.
TEMP OVER	● The temperature is too high.	● Turn off the power, and wait for a while.
DEFECT	● Since this disc has scratches on it, the recording operation was skipped.	● Replace the disc with another recordable disc. ● Turn off the power and then turn it back on.
NAME FULL	● The number of characters for the disc name or track name exceeds 100.	● Shorten the disc or track name.
MECHA ERR** (*:Number or symbol)	● There is a mechanical problem and the disc is not working properly.	● Turn off the power, and press the EJECT button.
NOT AUDIO	● The data recorded on this disc is not audio data.	● Select another track. ● Replace the disc.
U TOC W ERR	● The TOC information could not be created properly due to a mechanical shock or to scratches on the disc.	● Turn off the power, and try to write the TOC again. (Remove any source of shock or vibration whilst writing.)
U TOC ERR* (*: Number or symbol)	● The TOC information on this disc does not meet the MD specifications or it cannot be read.	● Replace it with another disc. ● Erase all the data, and try recording.



ADJUSTMENT

1. Preparation for ajustment

Test disc

	Type	Test disc	Parts No.	Price Code
1	High reflection disc	TGYS1 (SONY)	RRCDT0101AFZZ	GB
2	Low reflection disc	Recording minidisc	UDSKM0001AFZZ	AZ
3	———	Head adjusting transparent disc	RRCDT0103AFZZ	BK

Extension cable (See Fig. 18-3)

	Type	Parts No.	Price Code
1	Extension PWB for Servicing	RUNTK0385AFZZ	BS
2	Extension Connector (2 Pin)	QCNWK0059AFZZ	AF
3	Extension Cable (26 Pin)	QCNWK0038AFZZ	AF
4	Extension Connecter (5 Pin)	QCNWK0060AFZZ	AH
5	Extension Cable (5 Pin)	QCNWK0061AFZZ	AK
6	Extension Cable (24 Pin)	QCNWK0035AFZZ	AN
7	Extension Cable (8 Pin)	QCNWK0086AFZZ	AM

2. Test mode

Test mode setting

Load the playback disc 1 (high reflection disc) or the record disc 2 (low reflection disc). Holding down the ENTER button and PLAY/PAUSE button in power OFF state, press the RESET button.

As a result the power supply of the set is turned on, the set enters the TEST mode, and the following display indication appears.

A: TEST X1 ✳✳
TEST

B: AUTO
TEST

✳✳Represents version of MD microcomputer.

Entering the specific modes

Whenever the DISPLAY button is pressed while the display is in the AUTO state, the mode is changed as follows.

AUTO → RESULT → MANUAL

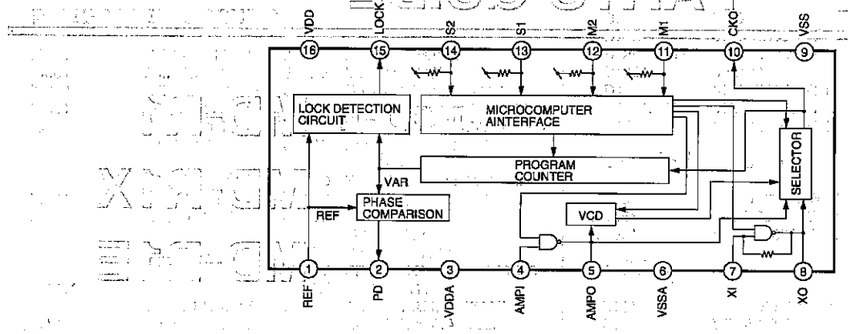
• Test mode canceling procedure

•Press the RESET button.
Or unplug the AC cord from the socket. Thereby the set exits the TEST mode.

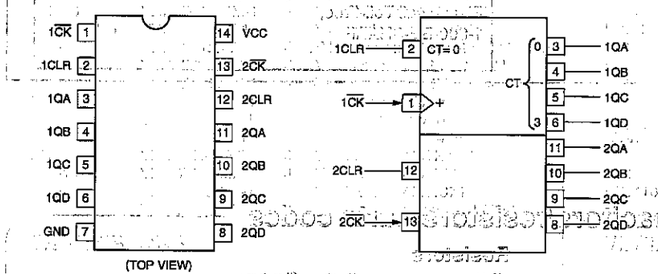
• Test Mode

1. AUTO Mode	• Automatic adjustment is performed. (After adjustment the grating adjustment mode is set.) • Set value is output through the display interface. • Continuous playback is performed (error rate display).
2. RESULT Mode	• Temperature is displayed. • The setting is displayed. • Set value is changed manually (in servo OFF state).
3. MANUAL Mode	• Seeing the displayed measurement value/set value, make manualadjustment to set values within the allowable range. • Continuous playback is performed (error rate display).
4. INNER Mode	• Determine the position where the INNER switch is turned on.(only high reflection disc.)
5. JUNP Mode	• 1 line, 10 lines or 400 lines manual jump is performed.
6. TEST/PLAY Mode	• Continuous playback from the specified address is performed. • C1 error rate measurement
7. TEST/REC Mode	• Continuous record from the specified address is performed. • Change of record laser output

IC1907 VHiTC9246F/-1 (TC9246F)



IC1908 VHi74VHC393F1 (74VHC393F)



IC1911 VHi74VHC74F-1 (74VHC74F)

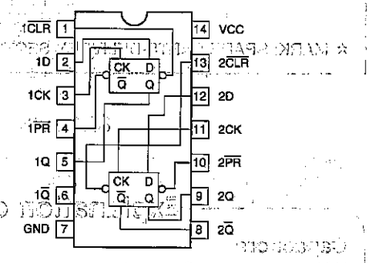


Figure 61-1 BLOCK DIAGRAM OF IC

WIRING OF PRIMARILY SUPPLY LEADS (FOR MD-R1E ONLY)

If any one of the bands shown in Fig. 61-2 is removed for some reason, be sure replace it to the original position and same appearance as berore.

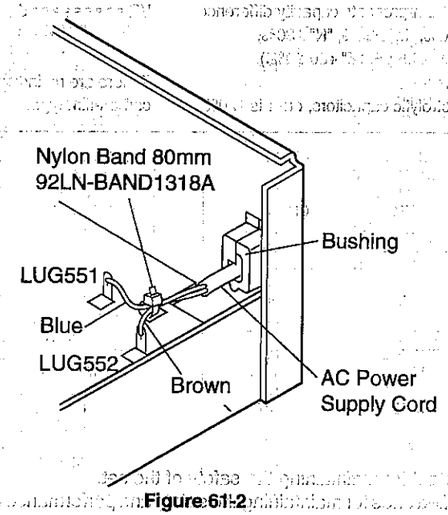
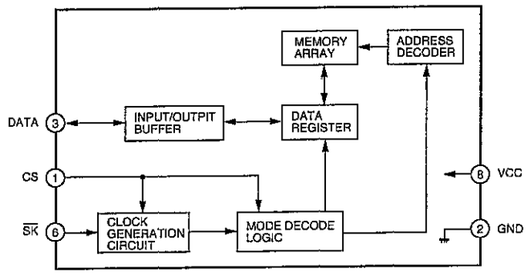
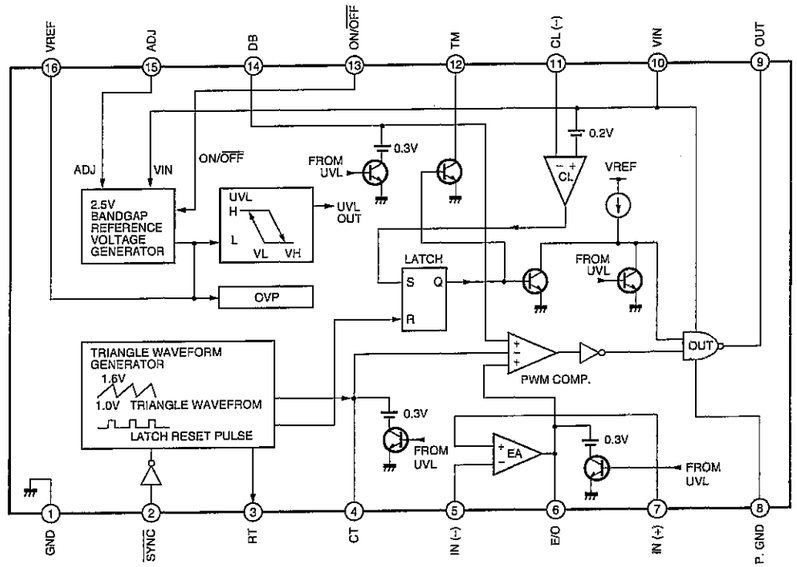


Figure 61-2

IC1402 VHiS2900AFE-1 (S2900AFE)



IC1801 VHiHA16114F-1 (HA16114F)



IC1802 VHiNJM2403M-1 (NJM2403M)

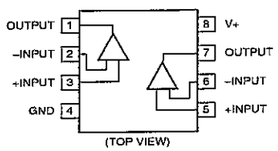


Figure 60 BLOCK DIAGRAM OF IC

1. AUTO Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Once press the Display button.	AUTO menu mode	[AUTO]
Step 3	Once press the Play button.	Slide shift to innermost periphery and start of automatic adjustment • When the high reflection disc is used, ✳✳✳ changes as follows TEO→FEO→Hfg→TRC→HTG→HTB→HFG • When the low reflection disc is used, ✳✳✳ changes as follows TEO→FEO→Lfg→TRC→LTG→LTB→ LFG→GTL→TRC→GTG→GTB→LFG	[✳✳✳ : ○○ ●●]
Step 4	If adjustment is OK, the process proceeds to Step 5. If adjustment is NG, the process proceeds to Step 9.		
Step 5	End of adjustment		[COMPLETE]
Step 6	Once press the Play button. Press the Stop button.	Step 7 Step 8	
Step 7	Continuous playback (pit section) Continuous playback (groove section)		[s□□□□c△△△△] [a□□□□c△△△△]
Step 8	Once press the Stop button.	Test mode STOP state	[AUTO]
Step 9	Adjustment status output	• Adjustment NG: When TEO or FEO measured value is out of range, adjustment is disabled or focus ON is disabled.	[Can't ADJ.]
Step 10	Once press the Stop button.	Test mode STOP state	[AUTO]

• ✳✳✳: Adjustment name, ○○: Measurement name, ●●: Set value, □□□□: Address, △△△△: C1 Error

2. RESULT Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Press the Display button twice.	RESULT menu mode	[RESULT]
Step 3	Press the Play button.	Measured value display: Temperature	[TMP: ◆◆]
Step 4	Press the Display button.	Measured value display: Tracking error offset	[TEO: ○○]
Step 5	Press the Display button.	Measured value display: Focus error offset	[FEO: ○○]
Step 6	Press the Display button.	Measured value display: High reflection focus gain	[HFG: ●●]
Step 7	Press the Display button.	Measured value display: High reflection pit tracking gain	[HTG: ●●]
Step 8	Press the Display button.	Measured value display: High reflection pit tracking error balance	[HTB: ●●]
Step 9	Press the Display button.	Measured value display: Low reflection focus gain	[LFG: ●●]
Step 10	Press the Display button.	Measured value display: Low reflection pit tracking gain	[LTG: ●●]
Step 11	Press the Display button.	Measured value display: Low reflection pit tracking error balance	[LTB: ●●]
Step 12	Press the Display button.	Measured value display: Low reflection TOTAL signal level	[GTL: ●●}
Step 13	Press the Display button.	Measured value display: Low reflection groove tracking gain	[GTG: ●●]
Step 14	Press the Display button.	Measured value display: Low reflection groove tracking error balance	[GTB: ●●]
Step 15	Press the Stop button.	RESULT menu mode	[RESULT]

• ○○ : Measurement name, ●●: Set value, ◆◆: Temperature code
• Pressing the REC button results in reversing.
• When the JOG SW is turned in + direction while the setting is displayed, the setting increases, and the new setting is stored in RAM.
• When the JOG SW is turned in - direction while the setting is displayed, the setting decreases, and the new setting is stored in RAM.

● Lead-in switch position measurement mode (Test Disc 1 is used)

Measurement with high reflection disc (check when the mechanism switch was replaced)

Step No.	Setting Method	Remarks	Display	
			Disc for record	Disc for playback
Step 1	Test mode start	Servo OFF (Power ON)	AUTO	AUTO
Step 2	Once press the TOC Edit button.		Operation is disabled if disc for record is in serted.	INNER
Step 3	Once press the Play/ Pause button.	The sub-code cluster value of Read-in switch position is displayed.		[s□□□□ a△△△△]

Note : Adjust the lead-in switch position at SUBQ FF85 to FFD2.

1. Loosen the three screws (A) fixing the mechanism switch PWB.
2. Pressing the mechanism switch PWB in the arrow direction, retighten the screw. Then, measure again the position of lead-in switch.

After position adjustment fix the mechanism switch PWB with the three screws (A). (See Figure 16.)

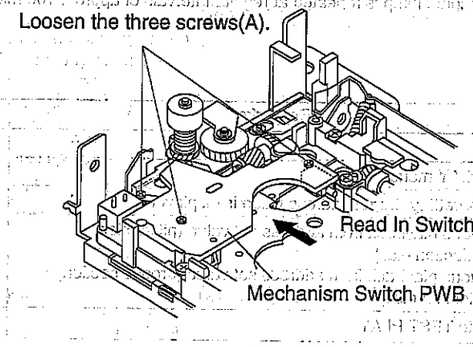


Figure 16

● Forced rotation of loading motor

While the display indication is in AUTO and EJECT state, the loading motor can be forcibly rotated by turning the Jog dial.

IC1401 RH-iX2568AFZZ (IX2568AF):MD System Microcomputer (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	MINF	Input	Disc classification detect input
2	TESTK1	Input	Test key input 1
3	TESTK2	Input	Test key input 2
4	HINF	Input	Mechanism/Head location input
5	AVSS	–	Ground terminal
6	TEST	Input	Input for test, usually connected ground
7*	X2	Output	Not used
8	X1	Input	Connected to power supply 2.8V
9	VSS	–	Ground terminal
10	5.6448MHz	Input	5.6448MHz input
11*	XTAL	Output	Not used
12	RESET	Input	Reset input
13	NC	—	Not connection internally
14	MDRSW	Output	MDRSW output
15	HFON	Output	High frequency super position ON/OFF control output
16	HDON	Output	Magnetic head current ON/OFF control output
17	LD+	Output	Loading motor + control output
18	LD-	Output	Loading motor – control output
19	INNSW	Input	Inner switch detection input
20*	FSW2	Output	Not used
21	FSW1	Output	Switch power frequency selection
22	DINT	Input/Output	LSI interruption request signal
23	NC	–	Not connection internally
24	ST-ID	Input	Synchro record start input
25	SERCH	Input	Synchro record interrupt input
26	R/$\overline{P}$	Output	Record /Play select output
27	DSENSE	Input	Encoder/Decoder LSI servo status detection signal
28	FOK	Input	Focus OK detection signal input
29	GFS	Input	Frame sync lock status input
30	CIN	Input	Track count signal input
31	SYD0	Input/Output	Encoder/Decoder LSI data bus terminal
32	SYD1	Input/Output	Encoder/Decoder LSI data bus terminal
33	SYD2	Input/Output	Encoder/Decoder LSI data bus terminal
34	SYD3	Input/Output	Encoder/Decoder LSI data bus terminal
35	SYD4	Input/Output	Encoder/Decoder LSI data bus terminal
36	SYD5	Input/Output	Encoder/Decoder LSI data bus terminal
37	SYD6	Input/Output	Encoder/Decoder LSI data bus terminal
38	SYD7	Input/Output	Encoder/Decoder LSI data bus terminal
39	SYRD	Output	Encoder/Decoder LSI register read pulse output
40	SYRS	Output	Encoder/Decoder LSI register selection output
41	SYWR	Output	Encoder/Decoder LSI register write pulse output
42	ADJS	Output	Output for check
43	EPCS	Output	E^2PROM chip selection output
44	EPPD	Input/Output	E^2PROM serial data input/output
45	EEPK	Output	E^2PROM sirial clock output
46	DISC	Output	Disc classification detect output
47	PCNT0	Output	Power control output
48	PCNT1	Output	Power control output
49	LDON	Output	Laser ON/OFF control signal output
50	NC	–	Not connection internally
51*	ANLPTR	Output	Not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1301 VHiLR376411-1 (LR376411):ATRAC Companding (2/2)

Pin No.	Terminal Name	Input/Output	Function
51*	MCO27	Output	Microcomputer extension output port 2
52*	MCO26	Output	
53*	MCO25	Output	
54*	MCO24	Output	
55*	MCO23	Output	
56*	MCO22	Output	
57*	MCO21	Output	
58*	MCO20	Output	
59	MCI07	Input	Microcomputer extension input port
60	MCI06	Input	
61	MCI05	Input	
62	VCC	—	Power supply Power terminal
63	GND	—	Ground Ground terminal
64	MCI04	Input/Output	Microcomputer extension input port
65	MCI03	Input/Output	(input/output in test mode)
66	MCI02	Input/Output	
67	MCI01	Input/Output	
68	MCI00	Input/Output	
69	X44K	Input/Output	(Input/output in test mode)
70*	SDTO	Input/Output	
71	SDTI	Input/Output	
72	ADMUTE	Input/Output	
73	DMUTE	Input/Output	
74	GADDAT	Input/Output	
75	GDADAT	Input	
76	G74R	Input	General-use gate D-flip-flop
77	G74CK	Input	(input in test mode)
78	G74D	Input	
79	G74Q	Input/Output	
80*	G74QX	Input/Output	
81*	INVO	Input/Output	INV output — General-use gate
82	ANDO	Input/Output	AND output — * INV output: Inverse output of signal connected to INV input
83*	ORO	Input/Output	OR output — * AND output: AND output of signal connected to AND1 input 1 and AND input 2
84	ORI1	Input	OR input 1 — * OR output: OR output of signal connected to OR input 1 and OR input 2
85	ORI2	Input	OR input 2 — (Input in test mode)
86	ANDI1	Input	AND input 1
87	VCC	—	Power supply Power terminal
88	GND	—	Ground Ground terminal
89	ANDI2	Input	AND input 2 — General-use gate
90	INVI	Input	INV input — * EXOR output: Exclusive OR output of signal connected to EXOR input A and EXOR input B
91	EORA	Input	EXOR input A — * NAND output: NAND inverse output of signal connected to NAND input A and NAND input B
92	EORB	Input	EXOR input B — (Input/output in test mode)
93*	EORO	Input/Output	EXOR output
94	NA1A	Input	NAND1 input A
95	NA1B	Input	NAND1 input B
96*	NA1O	Input/Output	NAND1 output
97	NA2A	Input/Output	NAND2 input A
98	NA2B	Input/Output	NAND2 input B
99	NA2O	Input/Output	NAND2 output
100*	–	–	Terminal not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

● Adjustment of magnetic head mounting position

- When the magnetic head and optical pickup have been replaced, be sure to adjust the mounting position.
- For easier adjustment of mounting position move the optical pickup to the center position, and then adjust the position.

1. Set the adjusting transparent disc 3.
2. Lower the magnetic head up-shift arm with your finger, and raise the magnetic head.
3. Viewing the set from above, make an adjustment so that the magnetic head aligns with the optical pickup objective lens.
   - •Radial direction: Slightly loosen the head fixing screw (A), and shift the magnetic head fitting to align the head with the pickup abjective lens.
   - •Circumferential direction: Turn the magnetic head circumferential adjustment nut (B), and adjust to align the head with the objective lens.
4. Make sure that there is a clearance as shown in Figure 17-1 and the magnetic head moves up and down smoothly.
5. After adjustment apply Screw Lock to the head fixing screw (A) and adjusted magnetic head circumferential adjusting screw (B).

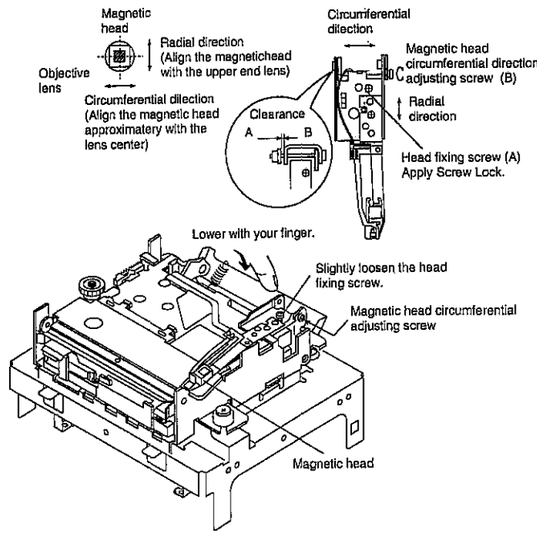

Magnetic head
Radial direction (Align the magnetichead with the upper end lens)
Objective lens
Circumferential dilection (Align the magnetic head approximatery with the lens center)
Circumferential dilection
Magnetic head circumferential direction adjusting screw (B)
Radial direction
Clearance
A
B
Head fixing screw (A) Apply Screw Lock.
Lower with your finger.
Slightly loosen the head fixing screw.
Magnetic head circumferential adjusting screw
Magnetic head

Figure 17-1

● Mechanism Adjustment

1. Optical pickup grating inspecting method

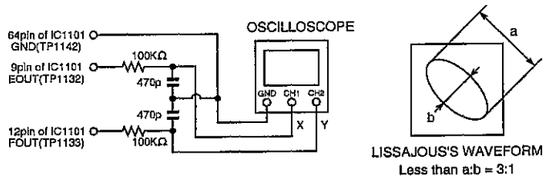


Figure 17-2 OPTICAL PICKUP GRATING DEVIATION MEASURING METHOD

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high refection MD disc ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spin motor, and make an adjustment, observing the Lissajous's wavefor.
2. After adjustment tighten the screws in arder of<1> , <2> ,< 3> .

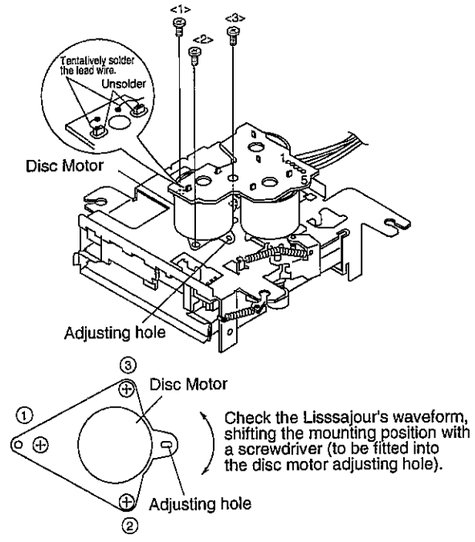


Figure 17-3

Error display	Errors	Corrective action
UTOC W ERROR	• An error occurred during UTOC rewriting, so that UTOC could not be rewritten corrctly.	• The disc has flaw. Replace the disc.
FOCUS ERROR	• When the disc was loading, the focus could not be set.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.
BLANK MD	• When UTOC was read, it was found that total TNO and the number of characters of NAME was 0.	• Check whether the disc is recordable one by preforming recording.
DEFECT	• Focus retract error occurred due to shock during REC-PLAY.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.

EXPLANATION OF MECHANISM ERROR

Error display	Errors
MECHA_ERR1_* MECHA_ERR2_* MECHA_ERR3_*	Ejection is not completed. Head-up is not completed. Head-down position 1.3 to 1.853V

HINF (IC1401 ④ PIN)

* = E	Ejection completed position	< 1.3 V
* = M	Horizontal midway position	> 3.06 V
* = L	Load completed position	1.853 ~ 2.48 V
* = D	Head-down position	1.3 ~ 1.853 V

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (2/2)

Pin No.	Terminal Name	Input/Output	Function
51	RAA8	Output	Address output ADR8 to external D-RAM
52	RAA9	Output	Address output ADR9 to external D-RAM
53	TEST0	Input	Input for test Usually connect to GND to use.
54	TEST1	Input	Input for test Usually connect to GND to use.
55*	C2PO	Output	Flag monitor output after C2 error correction
56*	ACRCER	Output	CRC error flag monitor output of ADIP
57	DIN	Input	Digital input signal
58	DOOUT	Output	Digital output signal
59	X1I	Input	Oscillation circuit input 33.8688MHz
60	X1O	Output	Oscillation circuit output 33.8688MHz
61	BCLK	Output	Music data shift clock
62	VDD1	—	Digital power terminal
63	DGND	—	Digital ground terminal
64	LRCK	Output	Music data L-ch/R-ch selection output
65	DFCK	Output	Clock 256 Fs for AD/DA converter digital filter
66	ADDATA	Input	Audio data input
67	DADATA	Output	Audio data output
68	X16MO	Output	Clock 16.9344MHz
69	SGLAT	Output	Compressed data latch clock
70	SGDAT	Input/Output	Compressed data input in record mode Compressed data output in playback mode
71	SGFLG	Output	Compressed data error flag output in playback mode
72	SGRQT	Input	Compressed data request signal
73	SGSHIFT	Output	Compressed data bit clock
74	DADDATA	Input/Output	Music data output in record mode Music data input in playback mode
75	ATBCLK	Output	Music data shift clock
76	ATLRCK	Output	Music data L-ch/R-ch selection output
77	X176KO	Output	Clock output f=175.4kHz (4 fs)
78	FODRF	Output	Focus servo forward output PWM
79	FODRR	Output	Focus servo reverse output PWM
80	TRDRF	Output	Tracking servo forward output PWM
81	TRDRR	Output	Tracking servo reverse output PWM
82	SLDRF	Output	Slide servo forward output PWM
83	SLDRR	Output	Slide servo reverse output PWM
84	SPDRF	Output	Slide servo forward output or spindle servo output PWM
85	SPDRP	Output	Slide servo reverse output or spindle rotation forward/reverse selection
86	EFMO	Output	EFM signal output in record mode. CIF (CI error flag) monitor output in playback mode.
87	VDD1	—	Digital power terminal
88	DGND	—	Digital ground terminal
89	AGAIN	Analog Output	A amp. gain adjustment output of RF LSI
90	AGAINS	Analog Output	A amp. gain selection output of RF LSI (High refrection <-> Low refrection)
91	BGAIN	Analog Output	B amp. gain adjustment output of RF LSI
92	BGAINS	Analog Output	B amp. gain selection output of RF LSI (High refrection <-> Low refrection)
93	EGAIN	Analog Output	E amp. gain adjustment output of RF LSI
94	EGAINS	Analog Output	E amp. gain selection output of RF LSI (High refrection <-> Low refrection)
95	FGAIN	Analog Output	F amp. gain adjustment output of RF LSI
96	FGAINS	Analog Output	F amp. gain selection output of RF LSI (High refrection <-> Low refrection)
97*	FBAL	Analog Output	Balance adjustment for focus error
98	TBAL	Analog Output	Balance adjustment for tracking error
99	TCGAIN	Analog Output	Gain adjustment output of tracking cross detecting amp.
100	VREF	Analog Output	Reference Voltage of RF LSI

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	FE	Analog Input	Focus error signal A-B
2	TE	Analog Input	Tracking error signal E-F
3	TOTAL	Analog Input	Focus signal A+B
4	DFCT	Analog Input	Disc defect detection signal E+F
5	AVCC	—	Analog power terminal
6	AGND	—	Analog ground terminal
7	WBI	Input	ADIP Wobble signal
8	TCRSO	Input	Track cross signal
9	ASY	Output	Positive logic output for EFM signal slice level control
10	ASYX	Output	Negative logic output for EFM signal slice level control
11	EFMI	Input	EFM signal input from RF amp.
12	VDD1	—	Digital power terminal
13	DGND	—	Digital ground terminal
14	RFLCT	Input	Signal to change gain A, B, E and F depending on reflection factor of disc
15	SENSE	Output	Servo status detection signal
16	FOK	Output	Focus OK detection signal
17	GFS	Output	Frame sync lock status output H: When the status corresponds to status of insert sync.
18	COUT	Output	Track cross signal output
19	MCCK	Output	Clock output for microcomputer Clock output is performed also in case of RSTX=0.
20	RSTX	Input	Chip reset input L: Reset
21	DINTX	Output	Output terminal to request interruption into system controller interface
22	SYD0	Output	System controller interface data bus terminal (LSB)
23	SYD1	Output	System controller interface data bus terminal
24	SYD2	Output	System controller interface data bus terminal
25	SYD3	Output	System controller interface data bus terminal
26	SYD4	Output	System controller interface data bus terminal
27	SYD5	Output	System controller interface data bus terminal
28	SYD6	Output	System controller interface data bus terminal
29	SYD7	Output	System controller interface data bus terminal (MSB)
30	SYRDX	Input	System interface register read pulse input
31	SYRS	Input	System controller interface register selection input
32	SYWRX	Input	System interface register write pulse input
33	RARASX	Output	Low address strobe signal output to external D-RAM
34	RACASX	Output	Column address strobe signal output to external D-RAM
35	RAWEX	Output	Data write enable signal output to external D-RAM
36	RAOEX	Output	Data output enable signal output external D-RAM
37	VDD2	—	DRAM interface power terminal
38	DGND	—	Digital ground terminal
39	RAD0	Input/Outout	Data input/output D0 (LSB) to and from external D-RAM
40	RAD1	Input/Output	Data input/output D1 to and from external D-RAM
41	RAD2	Input/Output	Data input/output D2 to and from external D-RAM
42	RAD3	Input/Output	Data input/output D3 (MSB) to and from external D-RAM
43	RAA0	Output	Address output ADR0 (LSB) to external D-RAM
44	RAA1	Output	Address output ADR1 to external D-RAM
45	RAA2	Output	Address output ADR2 to external D-RAM
46	RAA3	Output	Address output ADR3 to external D-RAM
47	RAA4	Output	Address output ADR4 to external D-RAM
48	RAA5	Output	Address output ADR5 to external D-RAM
49	RAA6	Output	Address output ADR6 to external D-RAM
50	RAA7	Output	Address output ADR7 to external D-RAM

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
- Parts marked with " ⚠ " (⊏ ⚌ ⚌ ⊐) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW350	EJECT	OFF
SW351	STOP	OFF
SW352	PLAY/PAUSE	OFF
SW353	REC	OFF
SW354	REVIEW	OFF
SW355	CUE	OFF
SW356	ENTER	OFF
SW357	DISPLAY/CHARACTER	OFF
SW358	TIMER/DELETE	OFF
SW359	NAME. TOC EDIT	OFF
SW360	POWER	OFF
SW361	INPUT SELECT	OFF
SW771	RESET	OFF
SW901	JOG	OFF
SW1951A/B	DISC PROTECT/DISC MEDEA SENSOR	OFF
SW1953	LEAD IN	OFF
SW1954	MD PLAY	OFF
SW1955	MD REC	OFF
SW1956	LORDING	OFF

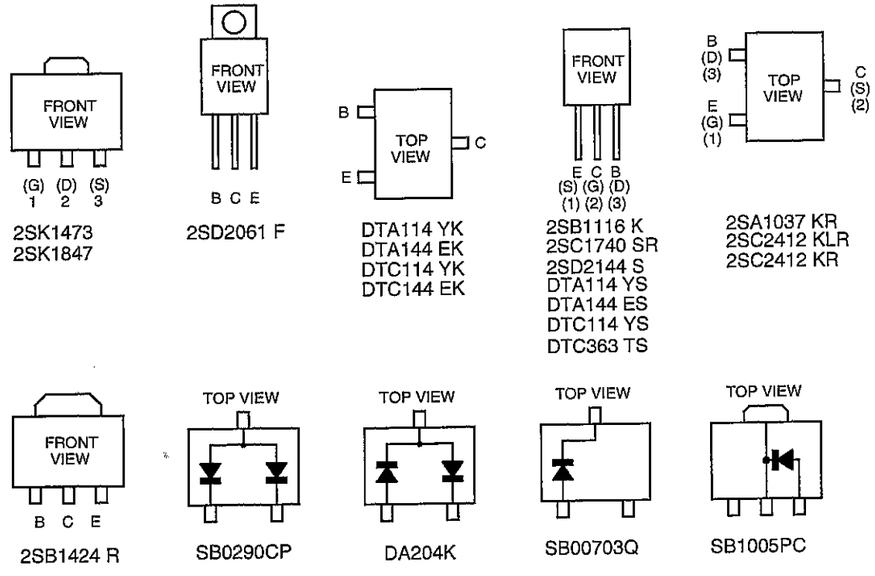


Figure 21 TYPES OF TRANSISTOR AND DIODE

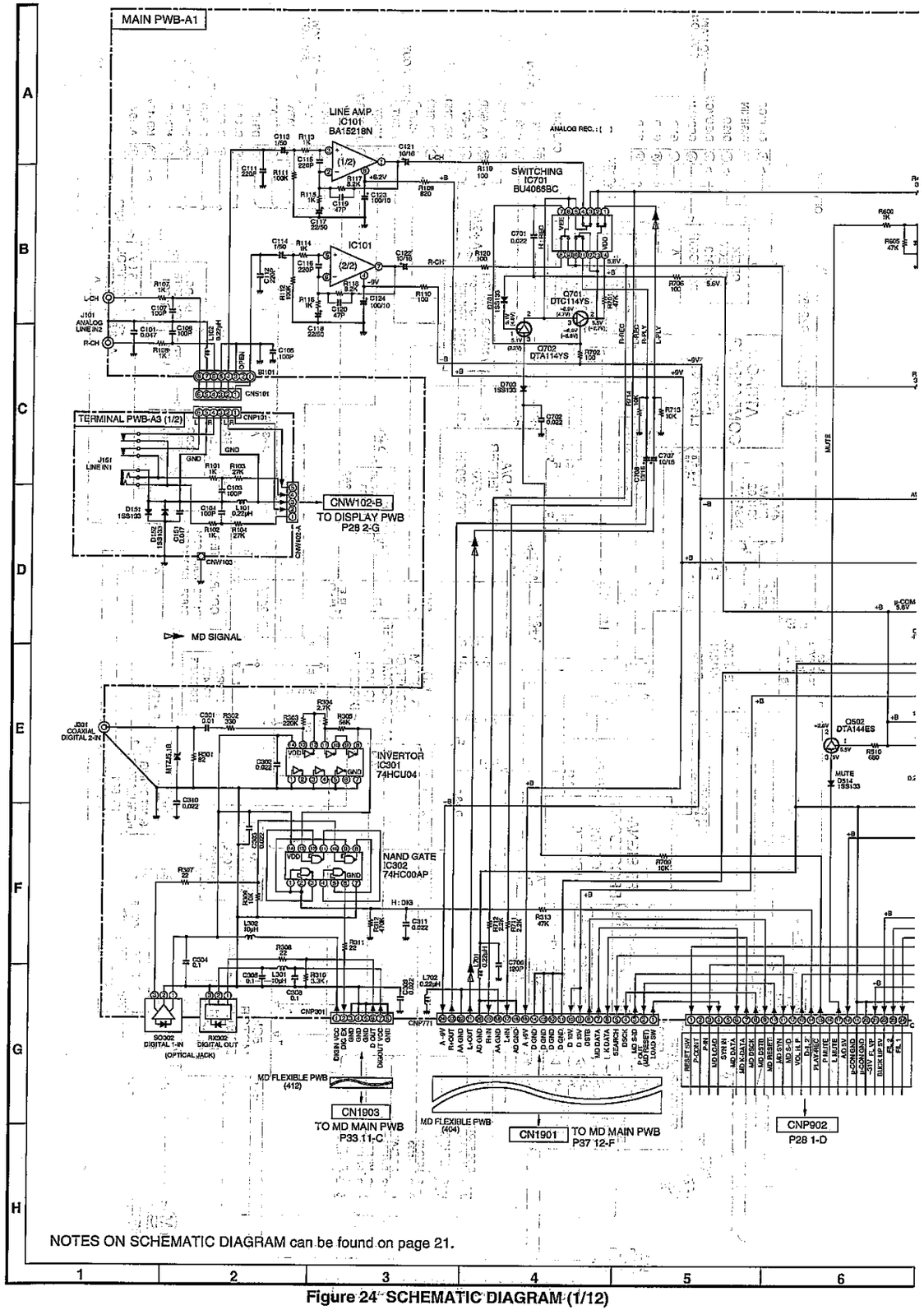


Figure 24 SCHEMATIC DIAGRAM (1/12)

FUNCTION TABLE OF IC

IC901 RH-iX0131AWZZ(M38197MA):System Microcomputer (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	P77/AN7	INT	Input	A/D input for destination setting Reset Check in case of power failure recovery
2	P76/AN6	KEY1	Input	A/D input
3	P75/AN5	L-MUTE	Output	LINE MUTE ON:L
4	P74/AN4	P-MUTE	Output	LINE MUTE ON:L
5*	P73/AN3		Output	L fixed
6*	P72/AN2		Output	L fixed
7*	P71/AN1		Output	L fixed
8	P70/AN0	PLAY-REC	Output	L output only during Rec and Rec Pause (only in case of analog input)
9	PB3	D-1, 2	Output	H:DIG1, L:DIG2
10	PB2/DA	VOL H. P	Output	DA output for HP volume control
11*	P57/SRDY		Input	L fixed
12	P56/SCLK	KEY2	Inout	A/D input
13	P55/SOUT	KEY3	Input	A/D input
14	P54/SIN3	JOG1	Input	JOG input
15	P53/SRDY3	JOG2	Input	JOG input
16	P52/SCLK2	(MD)S-ID	Output	S-ID output according to SYM-IN port
17	P51/SOUT2	(MD)SYN-OUT	Output	SYN-OUT output according to SYM-IN port
18	P50/SIN2	(MD)RESET	Output	MD reset output
19	P67/SRDY1	(MD)DSTB	Input	MD strobe input
20	P66/SCLK1	(MD)DSCK	Output	MD clock output
21	P65/SOUT1	(MD)K-DATA	Output	MD key data
22	P64/SIN1	(MD)MDDATA	Input	MD data input
23*	P63/CNTR1		Output	L fixed
24*	P62/CNTR0		Output	L fixed
25*	P61/PWM		Output	L fixed
26*	P60		Output	L fixed
27*	P47/T3OUT		Output	L fixed
28	P46/T1OUT	SYN-IN	Input	External syncro input
29	P45/INT1/ZCR	P-IN	Input	Power failure detection, zero cross detection
30	P44/INT4	P-CNT	Output	POWER ON:H
31*	P43/INT3		Output	L fixed
32	P42/INT2	RX-IN	Input	Remote control input
33*	P41		Output	L fixed
34	P40/INT0		Input	L fixed
35	RESET		Input	Resetting on L-H
36	XCIN		Input	32.768kHz, crystal connection
37	XCOUT		Output	32.768kHz, crystal connection
38	XIN		Input	8MHz, ceramic connection
39	XOUT		Output	8MHz, ceramic connection
40	VSS		–	Ground terminal
41*	P27		Output	L fixed
42	P26	(MD)LOAD	Input	MD LOAD SW detection, H-L = DISC IN
43*	P25		Output	L fixed
44*	P24		Output	L fixed
45-56	P23-10	DIG1-DIG12	Output	Digit output for FL
57-60	P07-04	DIG13-DIG16	Output	Digit output for FL
61-64	P03-00	SEG36-SEG33	Output	Segment output for FL
65-71	P37-32	SEG32-SEG26	Output	Segment output for FL
72	P30	SEG1	Output	Segment output for FL
73-80	P97-90	SEG2-SEG9	Output	Segment output for FL

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

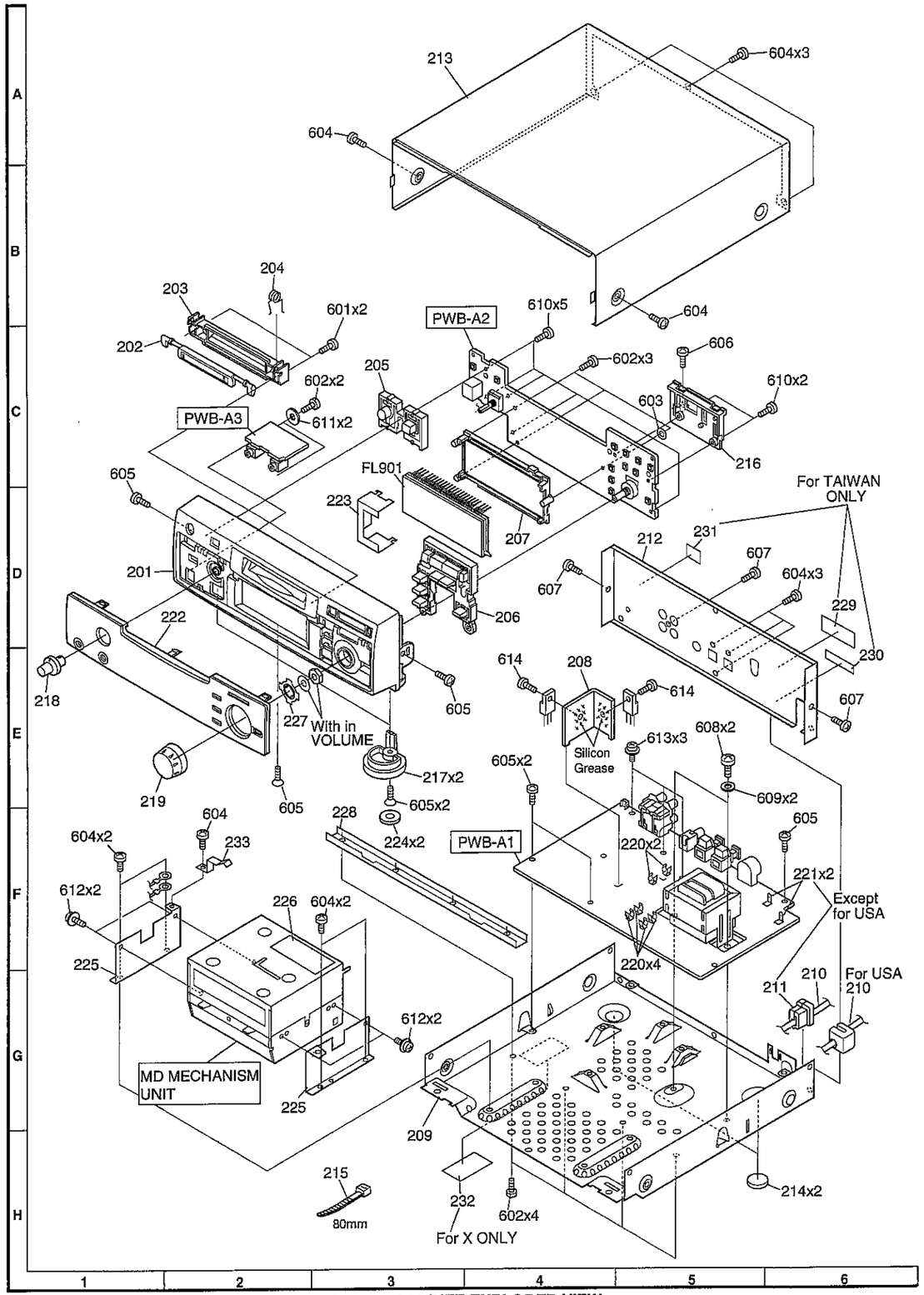


Figure 8 CABINET EXPLODED VIEW

Precaution to be taken when replacing and servicing the laser pickup.
The following precautions must be observed during servicing to protect your eyesagainst exposure to the laser.

Warning of possible eye damage when repairing:
If the AC power plug is connected when the inner cover of the unit is removed, the laser will light up during focus access (about 1 second) (Fig. 3-1).
During this operation, the laser will leak from the opening between the magnetic head and cartridge holder (Fig. 3-2).
In order to protect your eyes, you must not look at the laser during repair.
Before repairing, be sure to disconnect the AC power plug.

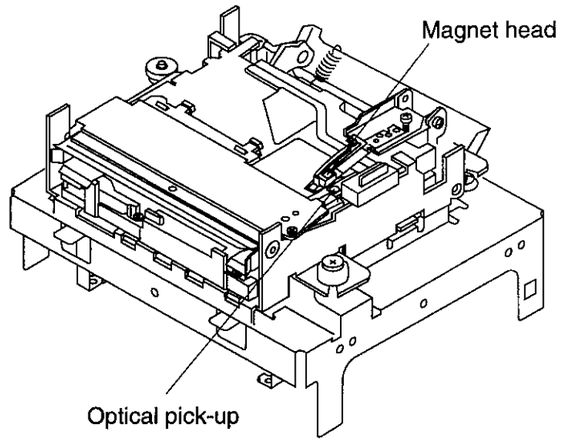


Figure 3-1

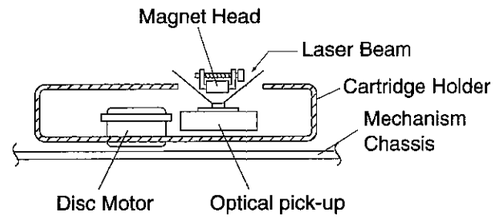


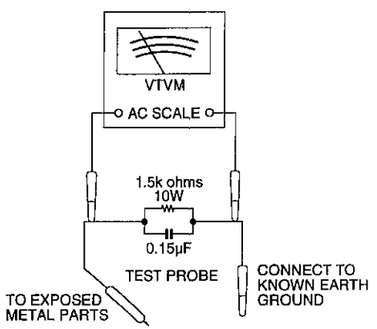
Figure 3-2

IMPORTANT SERVICE NOTES (FOR MD-R1 ONLY)

BEFORE RETURNING THE AUDIO PRODUCT
(Fire & Shock Hazard)
Before returning the audio product to the user, perfrom the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the audio product.
2. Inspect all protective devices such as insulating materials, cabinet, terminalboard, adjustment and compartmentcovers or shields, mechanical insulators etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Pulg the AC line cord directly into a 120 volt AC outlet.
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as conduit or electrical ground connected to earth ground.
- Use a VTVM or VOM with 1000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor (See diagram).
- Connect the resistor connection to all exposed metal parts having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.



All check must be repeated with the AC line cord plug connection reversed.
Any reading of 0.3 volt RMS (this corresponds to 0.2 milliamp. AC.) or more is excessive and indicates a potential shock hazard which must be corrected before returning the audio product to the owner.

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

● General

Type: MiniDisc recorder
Signle readout: Non-contact, semi-conductor laser pick-up
Audio channels: Stereo 2 channels/monaural (long-play mode) 1 channel
Frequency response: 20 to 20,000 Hz (+1/-3 dB)
Rotation speed: Approximately 400 to 900 rpm
Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding: ATRAC (Adaptive TRansform Acoustic Coding)
Recording method: Magnetic modulation overwrite method

Input jacks

Jack name	Jack sharpe	Input impedance	Reference input level	Minimum input level
LINE IN 1 (Front)	1/8" (3.5mm) stereo mini jack	Over 47 kohms	600 mVrms	158 mVrms
LINE IN 2 (Back)	Pin jack	Over 47 kohms	600 mVrms	158 mVrms
OPTICAL IN (Optical)	Square optical connector	———	———	———
COAXIAL (Coaxial)	Pin jack	75 ohms	500 mVp-p	———

A/D,D/A converter: 1-bit
Sampling frequency: 44.1kHz
Wow and flutter: Unmeasurable (less than ±0.001% W.peek)
Signal/noise ratio: 98 dB or better during playback (line output)

●Timer/clock

Type: Digital clock with date function
Timer: ON/OFF, once a day

Power source: (MD-R1) AC 120 V, 60 Hz
Power source: (MD-R1X) AC 110/127/220/240 V, 50/60 Hz
Power source: (MD-R1E) AC 230 V, 50 Hz
Power consumption: 14 W
Dimensions: Width: 10-11/16" (270 mm)
Height: 3-11/16" (93 mm)
Depth: 12-1/4" (311 mm)
Weight: (MD-R1/E) 7.1 lbs (3.2 kg)
Weight: (MD-R1X) 3.4 kg (7.5 lbs)

Output jacks

Jack name	Jack sharpe	output level	Load impedance
PHONES (Headphones)	1/8" (3.5mm) stereo mini jack	25 mW	32 ohms
LINE OUT	Pin jack	2 Vrms	50 kohms
OPTICAL OUT (Optical)	Square optical connector	———	———

● Remote control

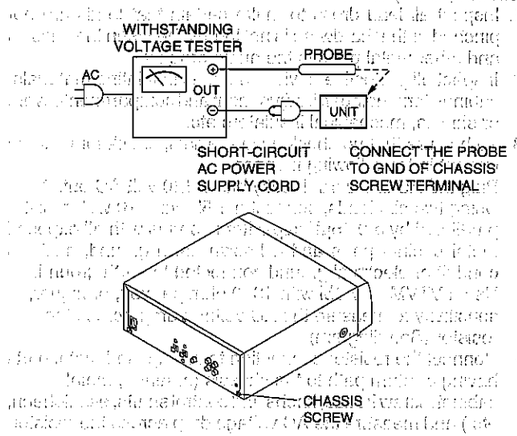
Power: DC 3V ("AA" (UM?SUM-3, R6, HP-7 or similar) battery included x 2)

Specifications for this model are subject to change without prior notice.

IMPORTANT SERVICE NOTES (FOR MD-R1E ONLY)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.
Setting of Withstanding Voltage Tester and set.

Set name	Set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current (Cutoff current)	4 mA
Unit	
Judgment	
OK: The "GOOD" lamp lights. NG: The "NG" lamp lights and the buzzor sounds.	



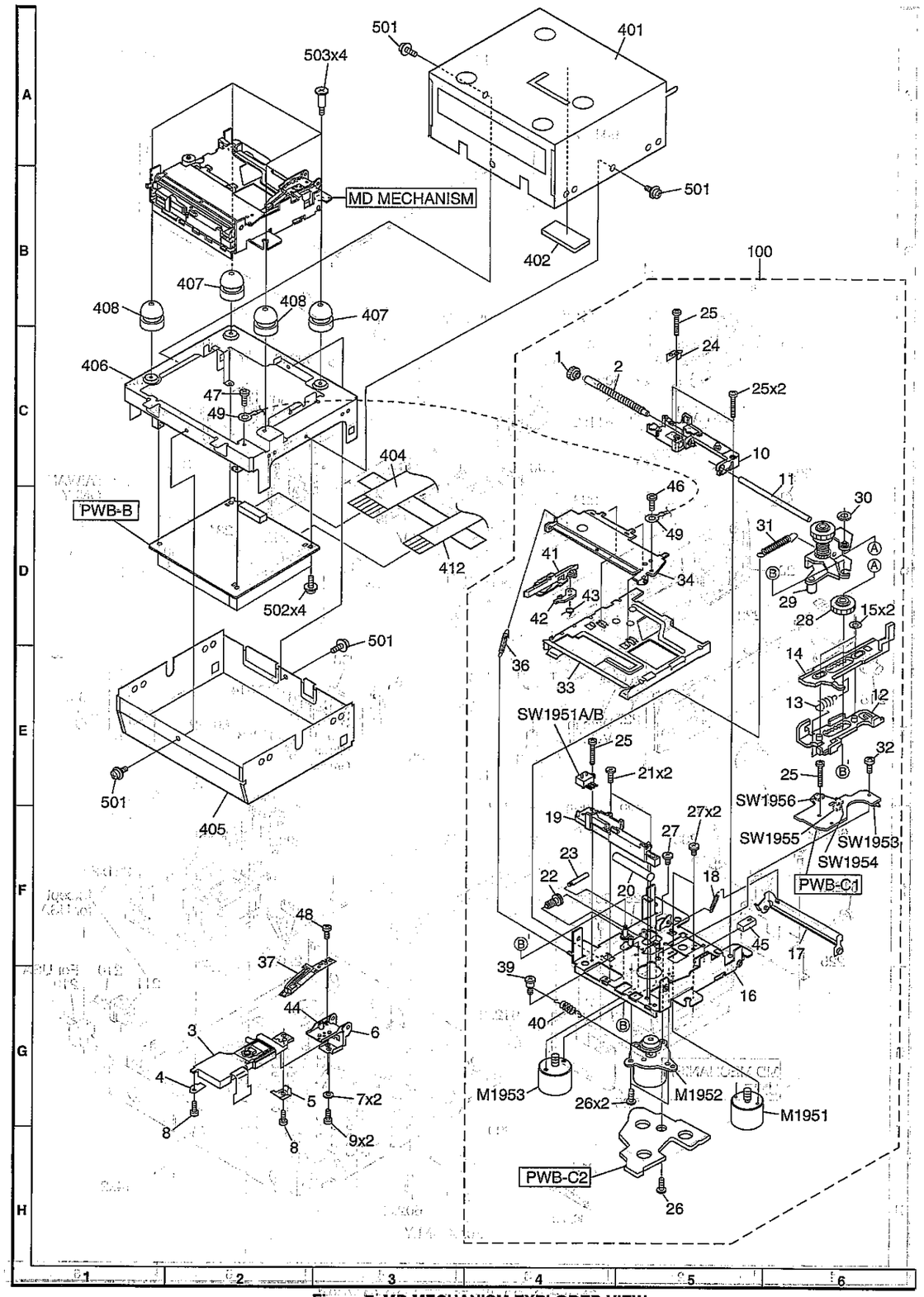
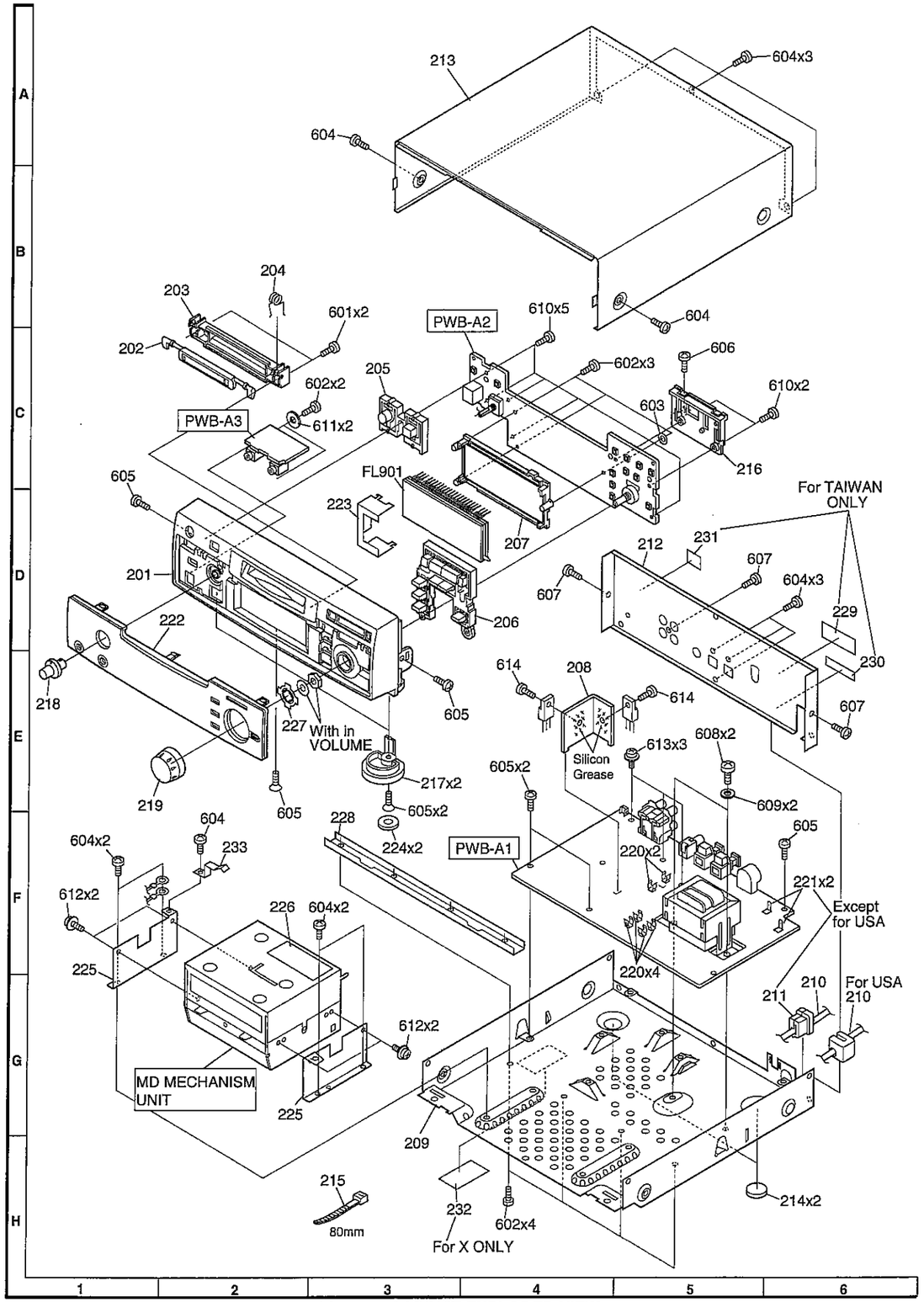


Figure 7 MD MECHANISM EXPLODED VIEW



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Before repairing, be sure to disconnect the AC power plug.

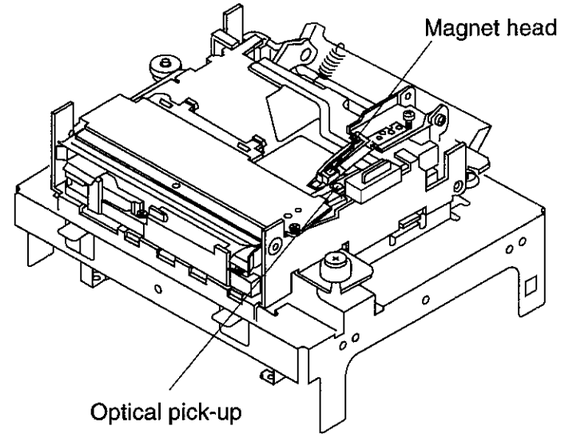


Figure 3-1

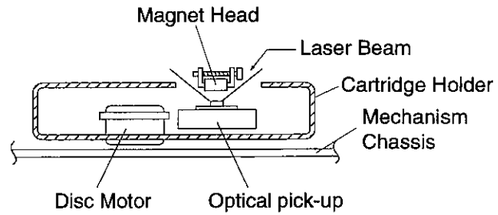


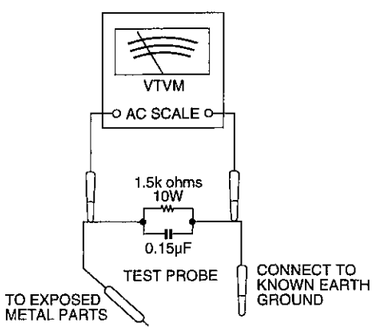
Figure 3-2

IMPORTANT SERVICE NOTES (FOR MD-R1 ONLY)

BEFORE RETURNING THE AUDIO PRODUCT
(Fire & Shock Hazard)
Before returning the audio product to the user, perfrom the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the audio product.
2. Inspect all protective devices such as insulating materials, cabinet, terminalboard, adjustment and compartmentcovers or shields, mechanical insulators etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Pulg the AC line cord directly into a 120 volt AC outlet.
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as conduit or electrical ground connected to earth ground.
- Use a VTVM or VOM with 1000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor (See diagram).
- Connect the resistor connection to all exposed metal parts having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.



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Rotation speed: Approximately 400 to 900 rpm
Error correction: ACIRC (Advanced Cross Interleave Reed-Solomon Code)
Coding: ATRAC (Adaptive TRansform Acoustic Coding)
Recording method: Magnetic modulation overwrite method

Power source: (MD-R1) AC 120 V, 60 Hz
Power source: (MD-R1X) AC 110/127/220/240 V, 50/60 Hz
Power source: (MD-R1E) AC 230 V, 50 Hz
Power consumption: 14 W
Dimensions: Width: 10-11/16" (270 mm)
Height: 3-11/16" (93 mm)
Depth: 12-1/4" (311 mm)
Weight: (MD-R1/E) 7.1 lbs (3.2 kg)
Weight: (MD-R1X) 3.4 kg (7.5 lbs)

Input jacks

Jack name	Jack sharpe	Input impedance	Reference input level	Minimum input level
LINE IN 1 (Front)	1/8" (3.5mm) stereo mini jack	Over 47 kohms	600 mVrms	158 mVrms
LINE IN 2 (Back)	Pin jack	Over 47 kohms	600 mVrms	158 mVrms
OPTICAL IN (Optical)	Square optical connector	———	———	———
COAXIAL (Coaxial)	Pin jack	75 ohms	500 mVp-p	———

Output jacks

Jack name	Jack sharpe	output level	Load impedance
PHONES (Headphones)	1/8" (3.5mm) stereo mini jack	25 mW	32 ohms
LINE OUT	Pin jack	2 Vrms	50 kohms
OPTICAL OUT (Optical)	Square optical connector	———	———

A/D,D/A converter: 1-bit
Sampling frequency: 44.1kHz
Wow and flutter: Unmeasurable (less than ±0.001% W.peek)
Signal/noise ratio: 98 dB or better during playback (line output)

● Remote control

Power: DC 3V ("AA" (UM?SUM-3, R6, HP-7 or similar) battery included x 2)

●Timer/clock

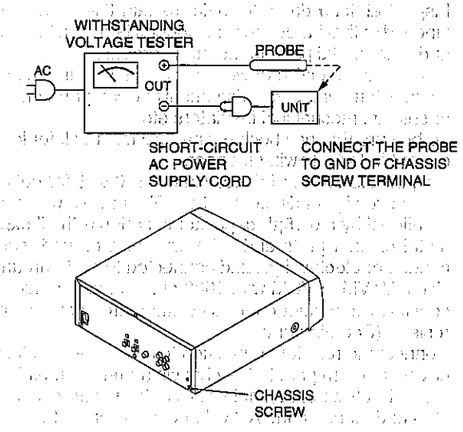
Type: Digital clock with date function
Timer: ON/OFF, once a day

Specifications for this model are subject to change without prior notice.

IMPORTANT SERVICE NOTES (FOR MD-R1E ONLY)

Before returning the unit to the customer after completion of a repair or adjustment it is necessary for the following withstand voltage test to be applied to ensure the unit is safe for the customer to use.
Setting of Withstanding Voltage Tester and set.

Set name	Set value
Withstanding Voltage Tester	
Test voltage	4,240 VPEAK 3,000 VRMS
Set time	6 secs
Set current (Cutoff current)	4 mA
Unit	
Judgment	
OK: The "GOOD" lamp lights. NG: The "NG" lamp lights and the buzzor sounds.	



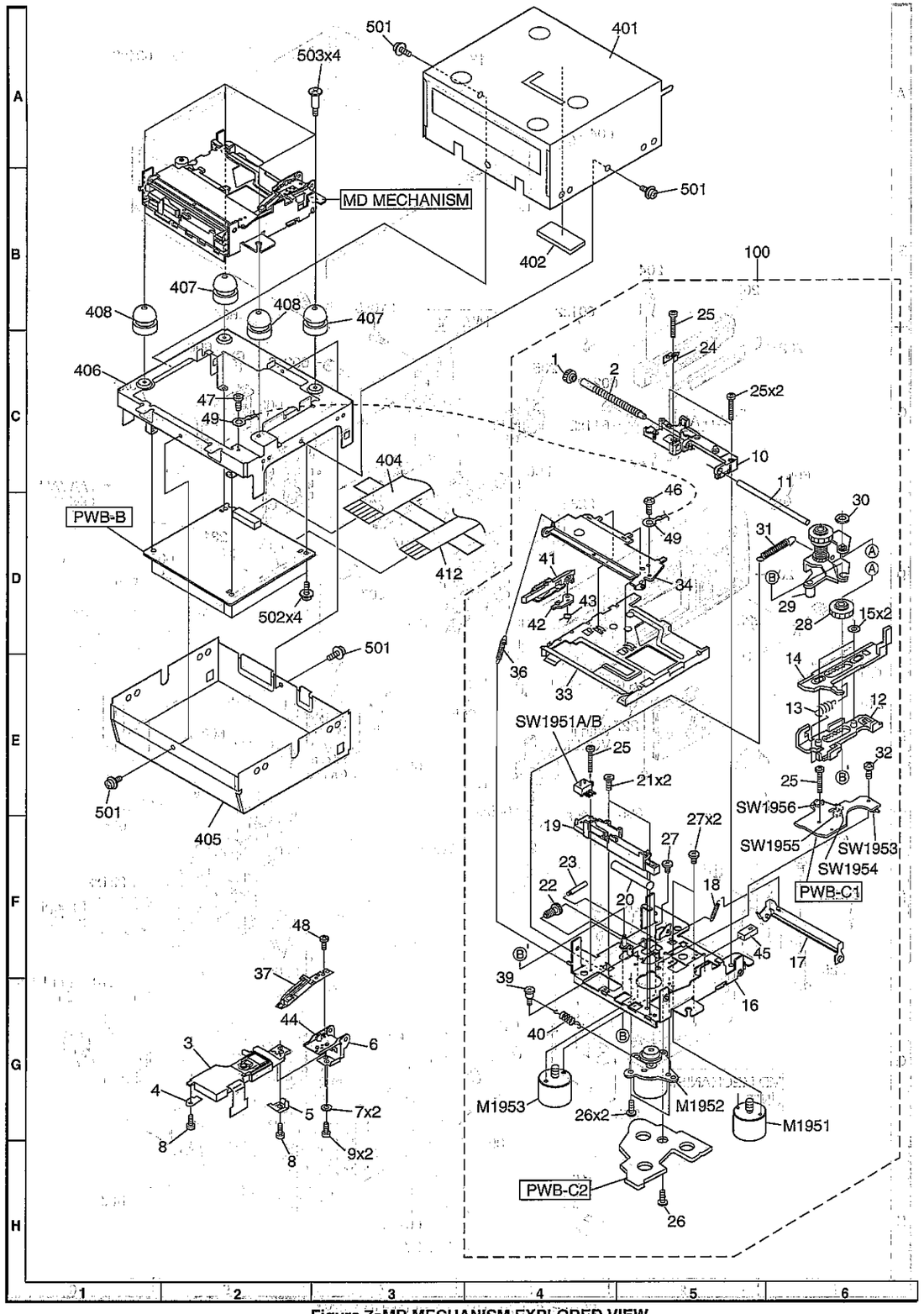


Figure 7 MD MECHANISM EXPLODED VIEW

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
225	LANGK0035AWFW	J	AF	Bracket,MD Unit
226	TCAUS0028AWZZ	J		Caution Label,Class 3B [Except for USA]
227	PGIDI0001AWZZ	J	AC	Guide,Jog Knob
228	LANGF0016AWFW	J	AG	Bracket,Reinforcement
229	TSPC-0384AWZZ	J		Label,Specifications [For Taiwan Only]
230	TLABZ0321AWZZ	J		Label,Importer [For Taiwan Only]
231	TCAUS0029AWZZ	J		Label,Caution [For Taiwan Only]
232	92LLABL1420A1	J	AC	Label,CLASS 1 [For X Only]
233	MSPRP0009AWFJ	J		Spring Earth
601	XEBSD26P10000	J	AA	Screw,ø2.6×10mm
602	XEBSD30P10000	J	AA	Screw,ø3×10mm
603	XWHFZ32-05070	J	AA	Washer,ø3.2×ø7×0.5mm
604	XJBSF30P10000	J	AA	Screw,ø3×10mm
605	XJBSD30P10000	J	AA	Screw,ø3×10mm
606	XJBSD30P06000	J	AA	Screw,ø3×6mm
607	XEBSF30P10000	J	AA	Screw,ø3×10mm
608	XHBSD40P08000	J	AA	Screw,ø4×8mm
609	XWSSD40-11000	J	AA	Washer,ø4mm
610	XEBSD30P12000	J	AA	Screw,ø3×12mm
611	XWHSD32-10130	J	AA	Washer,ø3.2×ø13×1.0mm
612	XBPSD20P08KS0	J	AA	Screw,ø2×8mm
613	LX-JZ0010AFFD	J	AA	Screw,ø3×10mm
614	XJBSD30P08000	J	AA	Screw,ø3×8mm

ACCESSORIES/PACKING PARTS

1	SSAKH0013AWZZ	J	AE	Polyethylene Bag,Unit
2	TLABM0023AWSA	J	AD	Feature Label
3	92LBAG1810B	J	AA	Polyethylene Bag,Accesories
4	TINSE0132AWZZ	J	AH	Operation Manual [For USA]
4	TINSE0136AWZZ	J	AH	Operation Manual [For E]
4	TINSZ0165AWZZ	J		Operation Manual [For X]
5	RRMCG0049AWSA	J	AX	Remote Control [For USA]
5	RRMCG0083AWSA	J	AX	Remote Control [Except for USA]
5-1	92LLID1810A	J	AQ	Lid,Remote Control [Except for USA]
5-1	92LLID1810D	J	AQ	Lid,Remote Control [For USA]
6	SPAKC0401AWZZ	J	AP	Packing Case [For USA]
6	SPAKC0403AWZZ	J	AP	Packing Case [For E]
6	SPAKC0404AWZZ	J		Packing Case [For X]
7	SPAKA0083AWZZ3	J	AG	Packing Add. (L/R)
8	TGANE0002AWZZ	J	AB	Guranty Card [For E Only]
9	————		—	Battery,Remote Control (UM/SUM 3) (Not Replacement Item)
10	TLABE0110AWZZ	J		Label,Bar Cord [For E]
10	TLABR0818AWZZ	J	AB	Label,Bar Cord [For USA]
11	QCNWG0003AWZZ	J	AN	Analog Connecting Cable×2
12	92LBAG667B	J	AC	Polyethylene Bag [Connecting Cable]
13	92LCARD1751A	J	AB	Registration Card [For E Only]
14	TCAUA0012AWZZ	J		Caution Card,Operation Manual [For Taiwan Only]
15	TLSTS0001AWZZ	J		China SS List [For X (Shina Only)]
16	UDSKM0001AFZZ	J	AZ	Recordable MD
17	SPAKZ0135AWZZ	J	AC	Pad,Protection (Remote Control)
18	SPAKZ0153AWZZ	J		Pad,AC Cord [Except for USA]
19	TINSZ0183AWZZ	J		Spanish Quick Guide (For USA)

P.W.B. ASSEMBLY (Not Replacement Item) [FOR UK/USA]

PWB-A1~3	92LPWB2353MANS	J	—	Main/Display/Terminal [For USA] (Combined Ass'y)
PWB-A1~3	92LPWB2355MANS	J	—	Main/Display/Terminal [For E] (Combined Ass'y)
PWB-B	DCYO-2931AF93	J	—	MD Main
PWB-C1,2	DUNTZ0761AF03	J	—	MD Mechanism Switch/Motor (Combined Ass'y)

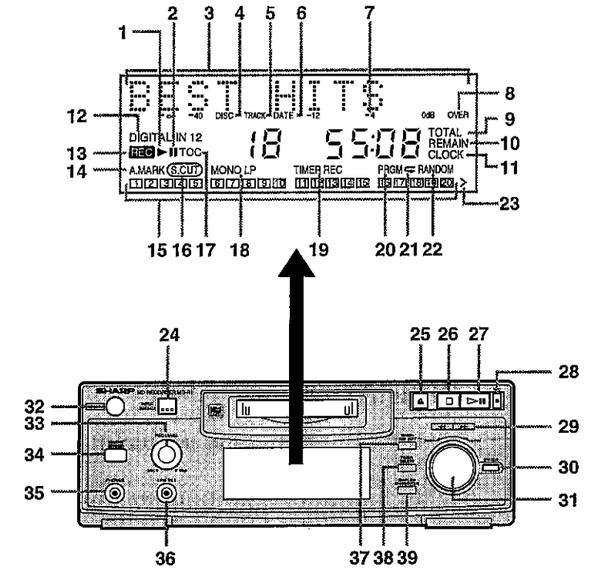
OTHER SERVICE PARTS

	QCNWK0035AFZZ	J	AN	Extension Cable (24Pin)
	QCNWK0038AFZZ	J	AF	Extension Cable (26Pin)
	QCNWK0059AFZZ	J	AF	Extension Cable (2Pin)
	QCNWK0060AFZZ	J	AH	Extension Cable (5Pin)
	QCNWK0061AFZZ	J	AK	Extension Cable (5Pin)
	QCNWK0086AFZZ	J	AM	Extension Cable (8Pin)
	RRCDT0101AFZZ	J	CB	Test Disc,Low Reflection

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
	RRCDT0103AFZZ	J	BK	Head Adjusting Transparend Disc
	RUNTK0385AFZZ	J	BS	Extension PWB
	UDSKM0001AFZZ	J	AZ	Recording Mini Disc

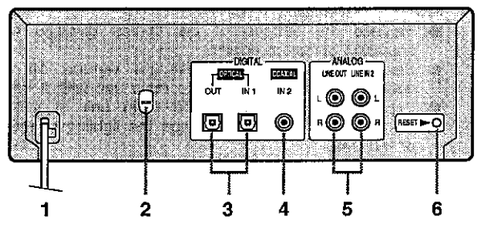
NAME OF PARTS

■ Front panel

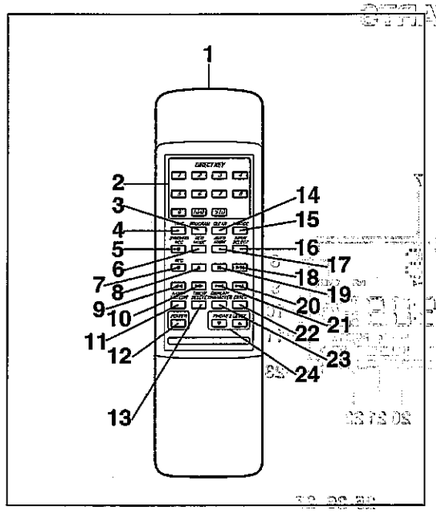


1. Play Indicator: ►
2. Pause Indicator: ❚❚
3. Level Meter/Character Information Display
4. Disc Name Indicator
5. Track Indicator
6. Date Indicator
7. Recording Level Indicator
8. Recording Level Too High Indicator
9. Total Time Indicator
10. Remaining Time Indicator
11. Clock Indicator
12. Input Type Display
13. Record Indicator: REC
14. Auto Mark Indicator
15. Music Calendar
16. Space Cut Indicator
17. TOC Indicator: TOC
18. Monaural Long-Play Mode Indicator
19. Timer Playback/Timer Recording Indicator
20. Programme Indicator
21. Repeat Indicator: ⮌
22. Random Indicator
23. More Tracks Indicator
24. Input Select Button
25. Eject Button: ▲
26. Stop Button: ■
27. Play/Pause Button: ►❚❚
28. Record Button: ●
29. Cue/Review Button: ◄◄ / ►►
30. Enter Button
31. Jog Dial (Next/Previous)
32. Power Switch
33. Record Level Control
34. Remote Sensor
35. Headphone Socket
36. Line 1 In Socket (Analogue)
37. Name•TOC Edit Button
38. Timer/Delete Button
39. Display/Character Button

■ Rear panel



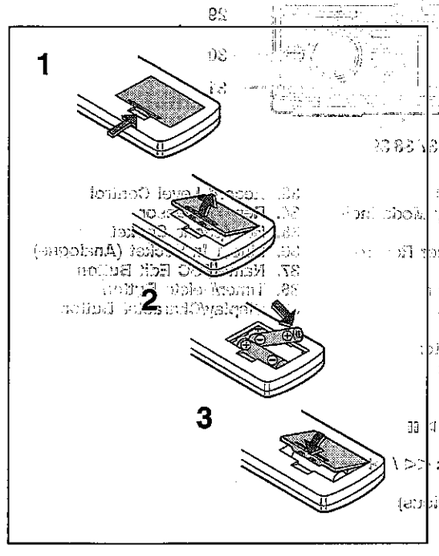
1. AC Power Lead
2. AC Voltage Selector (MD-R1 Only)
3. Optical Sockets (Digital 1 In/Out)
4. Coaxial Socket (Digital 2 In)
5. Analogue Sockets (Analogue 2 In/Out)
6. Reset Button



■ Remote Control

1. Remote Control Transmitter Window
2. Direct Key Buttons
3. Programme Button
4. Time Button
5. Synchro Record Button●
6. Record Mode Button
7. Record Button●
8. Eject Button▲
9. Review Button|◀◀
10. Cue Button▶▶|
11. Name•TOC Edit Button
12. Power Button
13. Timer/Delete Button
14. Clear Button
15. Play Mode Button
16. Input Select Button
17. Auto Mark Button
18. Play/Pause Button: ▶II
19. Stop Button: ■
20. Skip/Next Button▶▶|
21. Skip/Previous Button: |◀◀
22. Enter Button
23. Display/Character Button
24. Phones Level Buttons

OPERATION MANUAL



■ Loading the batteries for the remote control

1 Remove the battery compartment cover.

2 Insert 2 "AA" size batteries (UM/SUM-3, R6, HP-7 or similar) into the battery compartment.

- When inserting the batteries, push them towards the battery terminals.
- Placing the batteries the wrong way round can cause the unit to malfunction.

3 Replace the battery compartment cover.

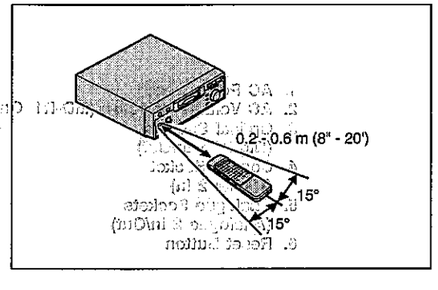
Battery removal:

- Push the batteries towards the battery terminals and remove them.

Precautions for battery use:

- Insert the batteries according to the direction indicated in the battery compartment.
- Replace all batteries with new ones at the same time.
- Remove the batteries if weak or if the unit is not in use for long periods to prevent potential damage due to batte leakage.
- Don't mix old and new batteries.

Caution:
Do not use rechargeable batteries (nickel cadmium battery, etc.).



■ Proper use of the remote control

Aim the remote control at the remote control sensor within 30° with no obstacles, and operate as shown.

Notes concerning use:

- Replace the batteries if the control distance decreases c operation becomes erratic.
- Periodically clean the transmitter window on the remote control and the sensor on the main unit with a soft cloth.
- Exposing the sensor on the main unit to strong light ca interfere with operation. Change the lighting or the direction of the unit.
- Keep the remote control away from moisture, excessive heat, shock, and vibrations.
- The remote control's usable range is between 0.2 m (8") and 6 m (20') away from the sensor.

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
	CNP771	QCNCWZJ24AWZZ	J	AK	Socket,24Pin
	CNP772	QCNCWZM24AWZZ	J	AH	Socket,24Pin
	CNP902	QCNCWZM24AWZZ	J	AH	Socket,24Pin
	CNP1252	QCNCM891BAFZZ	J	AC	Plug,2Pin
	CNP1601	QCNCM891EAFZZ	J	AD	Plug,5Pin
	CNP1602	QCNCM924EAFZZ	J	AD	Plug,5Pin
	CNP1901	QCNCMZE24AFZZ	J	AG	Socket,24Pin
	CNS1101	QCNCWY026AFZZ	J	AH	Socket,26Pin
	CNS1602A/B	QCNWN6437AFZZ	J	AG	Connector Ass'y,5-5Pin
	CNS1903	QCNCW762HAFZZ	J	AE	Socket,8Pin
	CNW102	QCNWN0583AWZZ	J	AD	Connector Ass'y,5Pin
	CNW103	QCNWN0526AWZZ	J	AD	Pin Header
	CNW104	QCNWN0526AWZZ	J	AD	Pin Header
	CNW601	QCNWN0582AWZZ	J	AE	Connector Ass'y,3Pin
	CNW772	QCNWN0584AWZZ	J	AH	Connector Ass'y,24Pin
⚠	F551,552	92LFUSET102E	J	AD	Fuse,1A [For E/X]
⚠	F551,552	92LFUSET102H	J	AD	Fuse,1A [For USA]
⚠	F560	92LFUSET401E	J	AD	Fuse,400 mA [For E/X]
⚠	F560	92LFUSET501D	J	AD	Fuse,500 mA [For USA]
	FL901	VVK16BT34G/-1	J	BH	FI Display
	J101	92LJACKL1756A	J	AG	Jack,Analog Line Out
	J151	92LJACKH1759A	J	AF	Jack,Line 1 In
	J301	QJAKZ0005AWZZ	J	AF	Jack,Coaxial (Digital 2 In)
	J601	92LJACKH1759A	J	AF	Jack,Headphones
	M1951	RMOTV0464AFZZ	J	AP	MD Slide Motor Ass'y
	M1952	RMOTV0472AFZZ	J	AU	MD Disc Motor Ass'y
	M1953	RMOTV0465AFZZ	J	AP	MD Loading/Head Motor Ass'y
	RX302	VHPGP1F32T/-1	J	AP	Jack,Optical (Digital 1 In/Out)
	SO302	VHPGP1F32R/-1	J	AP	Jack,Optical (Digital 2 In)
⚠	SW1	92LSOK1781A	J	AN	Switch Voltage Selector [For X Only]
	SW350	QSW-K0181AFZZ	J	AB	Switch,Key Type [EJECT]
	SW351	QSW-K0181AFZZ	J	AB	Switch,Key Type [STOP]
	SW352	QSW-K0181AFZZ	J	AB	Switch,Key Type [PLAY/PAUSE]
	SW353	QSW-K0181AFZZ	J	AB	Switch,Key Type [REC]
	SW354	QSW-K0181AFZZ	J	AB	Switch,Key Type [Review]
	SW355	QSW-K0181AFZZ	J	AB	Switch,Key Type [Cue]
	SW356	QSW-K0181AFZZ	J	AB	Switch,Key Type [ENTER]
	SW357	QSW-K0181AFZZ	J	AB	Switch,Key Type [DISPLAY/CHARACTER]
	SW358	QSW-K0181AFZZ	J	AB	Switch,Key Type [TIMER/DELETE]
	SW359	QSW-K0181AFZZ	J	AB	Switch,Key Type [NAME•TOC EDIT]
	SW360	QSW-K0181AFZZ	J	AB	Switch,Key Type [POWER]
	SW361	QSW-K0181AFZZ	J	AB	Switch,Key Type [INPUT SELECT]
	SW771	QSW-K0064AFZZ	J	AC	Switch,Key Type [Reset]
	SW901	QSW-Z0001AWZZ	J	AN	Switch,Push Type [Jog]
	SW1951A/B	QSW-P1005AFZZ	J	AF	Switch,Push Type [Disc Protect/Disc Media Sensor]
	SW1953	QSW-M0157AFZZ	J	AD	Switch,Slide Type [Lead In]
	SW1954	QSW-M0159AFZZ	J	AC	Switch,Push Type [MD Play]
	SW1955	QSW-M0159AFZZ	J	AC	Switch,Push Type [MD REC]
	SW1956	QSW-M0156AFZZ	J	AC	Switch,Leaf Type [Loading]
	UN221	VHLSPS4201/-1	J	AK	Receiver,Remote Control, LSPS4201

MD MECHANISM PARTS

1	NGERH0541AFZZ	J	AC	Gear,Drive
2	NSFTM0279AFFW	J	AE	Shaft,Drive Screw
3	RCTRH8153AF10	J	BU	Optical Pickup Unit
4	MSPRP0726AFFJ	J	AA	Spring,Plate
5	MSPRP0772AFFJ	J	AA	Spring,Drive Grip Plate
6	LANGF1528AFZZ	J	AK	Bracket,Pickup Guide Ass'y
7	XWSSD14-05000	J	AA	Washer,ø1.4×0.5mm
8	LX-BZ0804AFFF	J	AA	Screw,ø1.4×2.2mm
9	LX-BZ0824AFZZ	J	AA	Screw,ø1.4×3mm
10	LANGF1526AFZZ	J	AD	Bracket,Pickup Guide
11	NSFTM0277AFFW	J	AC	Shaft,Pickup Slide
12	MLEVF2515AFZZ	J	AG	Lever,Cam Plate Ass'y
13	MSPRD1321AFFJ	J	AB	Spring,Lack
14	NGERH0558AFZZ	J	AC	Gear,Lack
15	LX-WZ9269AFZZ	J	AA	Washer,ø1.2×ø3×0.25mm
16	LCHSM0902AFZZ	J	AL	Chassis,Drive Main Ass'y
17	MLEVF2518AFZZ	J	AC	Lever,Head Arm UP
18	MSPRD1318AFFJ	J	AB	Spring,Shift Arm
19	LANGF1527AFZZ	J	AD	Bracket,MD Guide
20	NSFTM0278AFFW	J	AC	Shaft,Pickup Guide
21	LX-BZ0850AFZZ	J	AB	Screw,ø1.7x7mm

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
22	NGERH0542AFZZ	J	AD	Gear,Loading (A)
23	NSFTM0280AFFW	J	AC	Shaft,Loading Gear
24	MSPRP0795AFFJ	J	AC	Spring,Drive Shaft
25	LX-BZ0848AFZZ	J	AB	Screw,ø1.7×9mm
26	LX-BZ0851AFZZ	J	AB	Screw,ø1.7×2.5mm
27	LX-BZ0849AFZZ	J	AB	Screw,ø2×2mm
28	NGERH0540AFZZ	J	AC	Gear,Loading (B)
29	MLEVF2559AFZZ	J	AL	Lever,Roller Arm
30	LX-WZ9268AFZZ	J	AA	Washer,ø1.5xø3.2x0.5mm
31	MSPRT1566AFFJ	J	AB	Spring,Roller Arm
32	LX-BZ0846AFZZ	J	AB	Screw,ø1.7×3mm
33	LHLDX3128AFZZ	J	AK	Holder,Cartridge Ass'y
34	MLEVF2536AFZZ	J	AF	Lever,Holder Arm
36	MSPRD1319AFFJ	J	AB	Spring,Holder Arm
37	RCILH0105AFZZ	J	AX	Magnetic Head
39	LX-BZ0880AFZZ	J	AC	Screw,ø2×2.2mm
40	MSPRT1565AFFJ	J	AC	Spring,Disc Motor
41	MLEVP1036AFZZ	J	AC	Lever,Guide
42	MLEVP1034AFZZ	J	AC	Lever,Catch
43	MSPRD1334AFFJ	J	AC	Spring,Catch
44	PCOVW8151AFZZ	J	AB	Cover,Head Guide
45	PCUSS0681AF00	J	AC	Cushion
46	XSPSN17P06K00	J	AB	Screw,ø1.7×6mm
47	XBPSD20P04K00	J	AA	Screw,ø2.4×4mm with Washer
48	LX-BZ0804AFFF	J	AA	Screw,ø14×2.2mm
49	QCNWN6567AFZZ	J	AC	Cable,with Treminal
100	KRPLF0011AF01	J	BT	MD Mechanism Ass'y
401	PCOVS3156AFFW	J	AH	Cover,Shield Top
402	PCUSS0654AFZZ	J	AB	Cushion,Head
404	QCNWN6316AFZZ	J	AQ	Flexible Cable,24Pin
405	PCOVS3158AFFW	J	AH	Cover,Shield Bottom
406	LANGK0880AFFW	J	AL	Frame
407	PCUSG0531AFSA	J	AD	Cushion (A)
408	PCUSG0531AFSB	J	AD	Cushion (B)
412	QCNWN6548AFZZ	J	AL	Flexible Cable,8Pin
501	XBPSD20P04K00	J	AA	Screw,ø2×4mm with Washer
502	XSPSN17P03K00	J	AB	Screw,ø1.7x3mm
503	LX-BZ0852AFFD	J	AC	Screw,ø1.7x8.9mm
M1951	RMOTV0464AFZZ	J	AP	MD Slide Motor Ass'y
M1952	RMOTV0472AFZZ	J	AU	MD Disc Motor Ass'y
M1953	RMOTV0465AFZZ	J	AP	MD Loading/Head Motor Ass'y
SW1951A/B	QSW-P1005AFZZ	J	AF	Switch,Push Type [Disc/Protect/Disc Media]
SW1953	QSW-M0157AFZZ	J	AD	Switch,Slide Type [Lead In]
SW1954	QSW-M0159AFZZ	J	AC	Switch,Push Type [MD Play]
SW1955	QSW-M0159AFZZ	J	AC	Switch,Push Type [MD Rec]
SW1956	QSW-M0156AFZZ	J	AC	Switch,Leaf Type [Loading]

CABINET PARTS

201	HPNLC1059AWSA1	J	AP	Front Panel [For USA]
201	HPNLC1088AWSA	J	AP	Front Panel [For E/X]
202	GDORF0013AWSA	J	AH	MD Door
203	LHLDZ1089AW00	J	AD	Holder,MD Door
204	MSPRD0027AWZZ	J	AB	Spring,MD Door
205	JKNBZ0164AWSA	J	AD	Knob,Power
206	JKNBZ0165AWSA	J	AG	Knob,MD Control
207	LHLDZ1086AWZZ	J	AE	Holder,FL
208	PRDAR0041AWFW	J	AG	Heat Sink
209	LCHSM0027AWFW	J	AR	Main Chassis
⚠ 210	QACCB0003AW00	J	BA	AC Power Supply Cord [For E/X Hong Kong Only]
⚠ 210	QACCD0005AWZZ	J	AN	AC Power Supply Cord [For USA]
⚠ 210	QACCE0003AW00	J	AG	AC Power Supply Cord [For X]
211	LBSHC0002AWZZ	J	AD	Bushing,AC Power Supply Cord [Except for USA]
212	GCAB-3058AWSA	J	AN	Rear Panel [For USA]
212	GCAB-3060AWSA	J	AN	Rear Cabinet [For E]
212	GCAB-3061AWSA	J	AN	Rear Cabinet [For X]
213	92LCAB2204CS1	J	AX	Top Cabinet
214	92LCUSN1585A	J	AA	Leg,Cushion
215	92LN-BAND1318A	J	AA	Nylon Band,80mm
216	LHLDF1008AWZZ	J	AD	Holder,PWB
217	GLEGP0002AWSA	J	AF	Insulator
218	JKNBK0027AWSA	J	AC	Knob,Record
219	JKNBK0028AWSA	J	AC	Knob,Volume
220	92LFSHOLD1652T	J	AB	Holder,Fuse
221	92LLUG1746A	J	AA	Lug,Terminal [Except for USA]
222	HDECQ0088AWSA	J	AK	Panel,Front Decoration
223	PSLDM3021AWFW	J	AE	Shield Plate
224	PCUSG0016AW00	J	AB	Cushion,Front Insulator

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R1208	VRS-CY1JB151J	J	AA	150 ohms,1/16W
R1209,1210	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1214	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1221	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1223	VRS-TV2AB331J	J	AA	330 ohms,1/10W
R1251	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1252,1253	VRS-CY1JB4R7J	J	AA	4.7 ohms,1/16W
R1303,1304	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1306	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1401	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1402,1403	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1404	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1405	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R1406	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1407,1408	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1409	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1411	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1412	VRS-CY1JB474J	J	AA	470 kohms,1/16W
R1413	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1414	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1415	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1416	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1418,1419	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1420	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1421	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1422	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R1423,1424	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1425	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R1427	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R1428~1430	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1452	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1453	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R1454	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1455	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R1456	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1458	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1459	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1460	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1461	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1462	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1463	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1464	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1466	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1601	VRD-CY1JB104J	J	AA	100 kohm,1/16W
R1605	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1607,1608	VRS-TQ2BB270J	J	AA	27 ohms,1/8W
R1609	VRS-CY1JB821J	J	AA	820 ohms,1/16W
R1610,1611	VRN-CY1JD123D	J	AB	12 kohms,1/16W,Metal Film
R1613	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R1614	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R1615	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1616	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R1617	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1620	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1621	VRS-CY1JB272J	J	AA	2.7 ohms,1/16W
R1622	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1650	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1651	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1652	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1653	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1654	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R1655	VRS-CY1JB433J	J	AA	43 kohms,1/16W
R1656	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R1657	VRS-CY1JB433J	J	AA	43 kohms,1/16W
R1658	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R1659	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1660	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R1661	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1662	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1663	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R1664	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1665	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R1701	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1702	VRS-CY1JB220J	J	AA	22 ohms,1/16W
R1703,1704	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1705,1706	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1707,1708	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1709	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R1710	VRS-CY1JB303J	J	AA	30 kohms,1/16W
R1711	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R1713	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1715	VRN-CY1JD332D	J	AA	3.3 kohms,1/16W

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
R1716	VRN-CY1JD123D	J	AB	12 kohms,1/16W
R1717	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1718	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R1719	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W
R1720~1722	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1723	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1731	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1733	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1734,1735	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1736	VRS-TQ2BB221J	J	AA	220 ohms,1/8W
R1737,1738	VRS-CY1JB433J	J	AA	43 kohms,1/16W
R1739	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1740	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R1741	VRS-CY1JB475J	J	AA	0.4 Mohms,1/16W
R1742	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1743	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R1744	VRS-CY1JB475J	J	AA	0.4 Mohms,1/16W
R1745	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1746,1747	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1748	VRS-TQ2BB221J	J	AA	220 ohms,1/8W
R1750,1751	VRS-TV2AB121J	J	AA	120 ohms,1/10W
R1753~1756	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1804	VRN-CY1JD392D	J	AA	3.9 kohms,1/16W
R1805	VRN-CY1JD272D	J	AA	2.7 kohms,1/16W
R1806	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1807	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R1811	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1812	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R1820	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R1821	VRS-CY1JB821J	J	AA	820 ohms,1/16W
R1822	VRN-CY1JD332D	J	AA	3.3 kohms,1/16W
R1823	VRN-CY1JD123D	J	AB	12 kohms,1/16W
R1825	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1826	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R1830~1835	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1836	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1837	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1841	VRN-CY1JD273D	J	AA	27 kohms,1/16W
R1842	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R1843	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1845	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1846	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1847	VRS-CY1JB243J	J	AA	24 kohms,1/16W
R1855	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R1856	VRS-CY1JB154J	J	AA	150 kohms,1/16W
R1857	VRS-CY1JB224J	J	AA	220 kohms,1/16W
R1858	VRS-CY1JB225J	J	AA	0.2 Mohms,1/16W
R1859	VRN-CY1JD392D	J	AA	3.9 kohms,1/16W
R1860	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R1861	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1901	VRS-TV2AB471J	J	AA	470 ohms,1/10W
R1902	VRS-TV2AB182J	J	AA	1.8 kohms,1/10W
R1903,1904	VRS-TV2AB821J	J	AA	820 ohms,1/10W
R1920	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1921	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1923	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R1927	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R1930	VRS-CY1JB821J	J	AA	820 ohms,1/16W
R1931	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R1935	VRS-TV2AB220J	J	AA	22 ohms,1/10W
R1937	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1938	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1948	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R1949	VRS-CY1JB821J	J	AA	820 ohms,1/16W
R1961	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R1962	VRS-CY1JB224J	J	AA	220 kohms,1/16W
R1963	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R1964	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R1965	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1967	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R1968	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1969	VRS-TQ2BB100J	J	AA	10 ohm,1/8W
R1994,1995	VRS-CY1JB101J	J	AA	100 ohm,1/16W

OTHER CIRCUITRY PARTS

BI101/CNS101	QCNWN0581AWZZ	J	AM	Connector Ass'y,8-6Pin
BI1603/CNS1603	QCNWN6504AFZZ	J	AD	Connector Ass'y,2Pin
BI1902/CNS1902	QCNWN6436AFZZ	J	AF	Connector Ass'y,5-5Pin
CNP101	QCNCM704FAFZZ	J	AB	Plug,6Pin
CNP301	QCNCW703HAFZZ	J	AB	Socket,8Pin
CNP601	QCNCM704CAFZZ	J	AB	Plug,3Pin

SETTING THE CLOCK

When recording, the date and time are recorded on the Minidisc.

■ Setting the date

1 Turn on the power and press the TIMER/DELETE button.

2 Within 10 seconds, turn the jog dial until "TIME ADJUST" appears.
- The date can be set by pressing the I◀◀ / ▶▶I button on the remote control.

3 Within 10 seconds, press the ENTER button.
- The unit will enter the date setting mode.

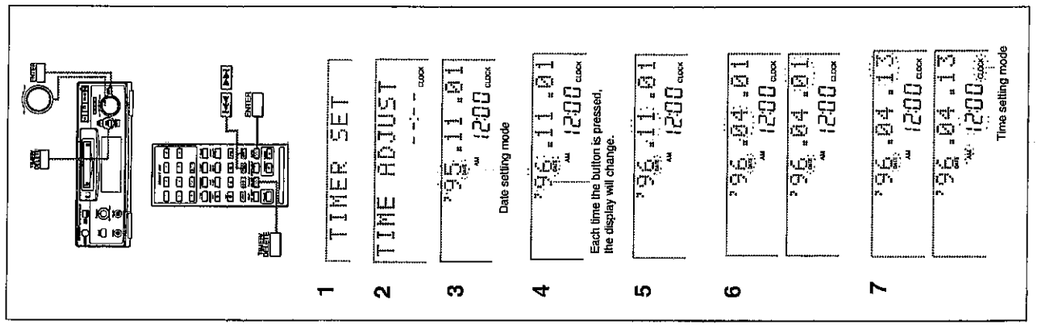
4 Set the "year" using the jog dial or the I◀◀ / ▶▶I button on the remote control.
- When you turn the jog dial and let go, the year will change up or down by one. When you turn and hold it, the year will change continuously.
- The year 2000 or later is set as follows:
  [00] indicates the year 2000
  [01] indicates the year 2001

5 Press the ENTER button to set the "year".

6 Set the "month" repeating steps 4 and 5.

7 Set the "day" repeating steps 4 and 5.
- The unit will enter the time setting mode.

Note:
- If a power failure continues for more than 10 minutes or the AC power lead is disconnected for more than 10 minutes, the date and time settings will be erased. If they are erased, set them again.



(Continued)

■ Setting the time

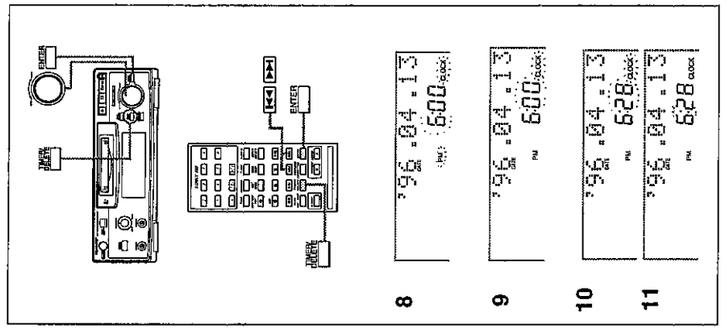
After step 7, described in the "Setting the date" section

8 Set the "hour" using the jog dial or the I◀◀ / ▶▶I button on the remote control.
- When you turn the jog dial and let go, the hour will change up or down by one. When you turn and hold it, the hour will change continuously.
- The clock uses the 12-hour system. Pay attention to the AM or PM indicator in the display.
  AM 0:00 → 12:00 midnight, PM 0:00 → 12:00 noon

9 Press the ENTER button to set the "hour".

10 Adjust the "minute" using the jog dial or the I◀◀ / ▶▶I button on the remote control.

11 Press the ENTER button to set the "minute".
- When the ENTER button is pressed, the clock will show the correct time.



Checking the date and time

After pressing the TIMER/DELETE button, turn the jog dial until the date and time are displayed.

Resetting the date and time

See "Setting the clock".
- Once you have set the date and time, "TIME ADJUST" will not be displayed in step 2. Turn the jog dial to make the date and time appear.
- If you don't need to change the settings, just press the ENTER button without turning the jog dial again.

TROUBLESHOOTING

■ If a problem occurs

If this unit functions abnormally during operation, first check the following items. If the unit continues to function abnormally, or if an abnormality appears other than listed below, turn off the player's power and disconnect the AC power plug, then consult your SHARP dealer or service personnel.

General

SYMPTOM	POSSIBLE CAUSE	REMEDY
The clock is wrong.	Did a power failure occur?	Try setting it again.
When a button is pressed, the unit does not respond.		Turn the power off and on again, and then retry the operation.
Radios make unusual noise or the picture on the TV screen is distorted.	When a radio or TV which uses an indoor aerial is placed near the unit, the picture on the TV screen may be distorted or the radio may not function properly.	It is recommended that you use an outdoor aerial.

Audio

A recording cannot be made.	Is the MiniDisc protected against accidental erasure?	Slide the accidental erase prevention tab back to its original position.
	Did you try to make recording on a playback-only MiniDisc?	Replace it with a recordable disc.
	Can you see the "TOC FULL" message in the display?	Put in another recordable disc with recording space on it.
Even though a disc has been loaded, "no disc" or "Error" is displayed.	The disc is very dirty.	Clean the disc.
Playback stops in the middle of a track, or playback is not performed properly.	Is the unit located near excessive vibrations?	Place the unit on a firm, level surface free from vibration.
Playback sounds are skipped.	Has condensation formed inside the unit?	Remove the disc and leave the power turned on. The unit should function properly in about 1 hour.

Remote control

SYMPTOM	POSSIBLE CAUSE	REMEDY
The remote control does not function or does not operate properly.	The batteries (polarity) are not inserted properly.	Insert properly.
	The batteries are dead.	Replace the batteries.
	The remote control is operated from an incorrect distance or angles.	Operate it within a range of 0.2 m (8") to 6 m (20') and within an angle of 15° to either side of centre.
	No disc has been loaded.	Load a disc.
The power cannot be turned on from the remote control.	Is the AC power lead plugged in?	Connect the AC power lead.

■ Moisture condensation

In the following cases, condensation may form inside the unit.

- Shortly after turning on a heater.
- When the unit is placed in a room where there is excessive steam or moisture.
- When the unit is moved from a cool place to a warm place.

When the unit has condensation inside, the disc signals cannot be read, and the product may not function properly.

- If this happens, remove the disc, and open the disc holder. The condensation should evaporate in approximately 1 hour. The unit will then function properly.

■ If a power failure occurs during recording

If the AC power plug is disconnected from the AC socket or a power failure occurs during recording (before the TOC information has been recorded on the disc), the audio portion being recorded at that time will be erased. When a recording is being added to a MiniDisc which already has a recording on it, if the TOC is not updated before the power failure, the added recording will be erased.

■ If a problem occurs

If this product is subjected to strong external interference (mechanical shock, excessive static electricity, abnormal supply voltage due to lightning, etc.), or if it is operated incorrectly, it may malfunction or the display may not function correctly. If such a problem occurs, do the following:

Unplug the AC power lead from the AC socket.
Wait about 20 - 30 seconds and then plug the AC power lead back into the AC socket.
Press the reset button on the back of the unit.

- When the reset button is pressed, all of the settings in memory will be erased.
- If strange sounds, smells or smoke come out of the unit or if a foreign object falls into the unit, turn off the power, unplug the AC power lead from the AC socket, immediately. Contact the shop where you purchased the unit.

MINIDISC SYSTEM LIMITATIONS

Even if the maximum recording time of a MiniDisc has not been reached, "DISC FULL" or "TOC FULL" may be displayed.	When the number of tracks used reaches the limit, regardless of the remaining recording time, further recording will be impossible. (Maximum number of tracks: 254)
Even if the number of tracks and the recording time have not reached the limit, "DISC FULL" may be displayed.	When emphasis information (equalizer treatment in the treble section) in a track switches on/off lots of times, each change is assumed to be the beginning of a new track, which will quickly use up all available track numbers and further recording will be impossible, regardless of the remaining recording time or the number of tracks on the original.
Even if several short tracks are erased, the remaining recording time may not show an increase.	When the remaining recording time of a disc is displayed, short tracks less than 8 seconds long may not be included in the total.
Two tracks may not be combined in editing.	For MiniDiscs on which repeated recording and editing operations were performed, the COMBINE function may not work.
The total of the recorded time and time remaining on a disc may not add up to the maximum possible recording time.	A cluster (about 2 seconds) is normally the minimum unit of recording. So, even if a track is less than 2 seconds long, it will use about 2 seconds of space on the disc. Therefore, the time actually available for recording may be less than the remaining time displayed. If there are scratches on discs, those sections will be automatically avoided (no recording will be placed in those sections). Therefore, the recording time will be reduced.

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C1952	VCKCYC1CB103K	J	AA	0.01 µF,16V
C1953	VCKCYC1CB474K	J	AC	0.47 µF,16V
C1954	VCCCCY1HH150J	J	AA	15 pF,CH),50V
C1955	VCKCYC1CB473K	J	AA	0.047 µF,16V
C1956	VCEAPS476AF0J	J	AC	47 µF,6.3V,Electrolytic
C1957	VCEAPS107AF0J	J	AC	100 µF,6.3V,Electrolytic
C1958	VCKCYC1CB473K	J	AA	0.047 µF,16V
C1959	VCKCYC1EE104Z	J	AA	0.1 µF,25V
C1961,1962	VCKCYC1CB473K	J	AA	0.047 µF,16V
C1963	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C1964	VCKCYC1HB102K	J	AA	1000 pF,50V
C1966	VCKCYC1HB391K	J	AA	390 pF,50V

RESISTORS

VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8x1.55mm, Green	
VRS-TO2EBB000J	J	AA	0 ohm,Jumper,1.55x3.1mm, Green	
R101,102	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R103,104	VRD-MN2EBD272J	J	AA	27 kohms,1/8W
R107,108	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R109	VRD-MN2EBD821J	J	AA	820 ohms,1/8W
R110	VRD-ST2CD101J	J	AA	100 ohm,1/8W
R111,112	VRD-MN2EBD104J	J	AA	100 kohm,1/8W
R113~116	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R117,118	VRD-MN2EBD822J	J	AA	8.2 kohms,1/8W
R119	VRD-ST2CD101J	J	AA	100 ohm,1/8W
R120	VRD-MN2EBD101J	J	AA	100 ohm,1/8W
R221	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R222	VRD-MN2EBD101J	J	AA	100 ohm,1/8W
R301	VRD-MN2EBD820J	J	AA	82 ohms,1/8W
R302	VRD-MN2EBD331J	J	AA	330 ohms,1/8W
R303	VRD-MN2EBD224J	J	AA	220 kohms,1/8W
R304	VRD-MN2EBD272J	J	AA	2.7 kohms,1/8W
R305	VRD-MN2EBD563J	J	AA	56 kohms,1/8W
R307,308	VRD-MN2EBD220J	J	AA	22 ohms,1/8W
R309	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R310	VRD-MN2EBD332J	J	AA	3.3 kohms,1/8W
R311	VRD-MN2EBD220J	J	AA	22 ohms,1/8W
R312	VRD-MN2EBD474J	J	AA	470 kohms,1/8W
R313	VRD-ST2CD473J	J	AA	47 kohms,1/8W
R350	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R351	VRD-MN2EBD122J	J	AA	1.2 kohms,1/8W
R352	VRD-ST2CD182J	J	AA	1.8 kohms,1/8W
R353	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R354	VRD-ST2CD122J	J	AA	1.2 kohms,1/8W
R355	VRD-ST2CD182J	J	AA	1.8 kohms,1/8W
R356	VRD-MN2EBD222J	J	AA	2.2 kohms,1/8W
R357	VRD-ST2CD392J	J	AA	3.9 kohms,1/8W
R358	VRD-MN2EBD102J	J	AA	1 kohm,1/8W
R409	VRD-ST2CD331J	J	AA	330 ohms,1/8W
R410	VRD-MN2EBD331J	J	AA	330 ohms,1/8W
▽R502	RH-CX107AFZZ		AE	Posistor,8.2 ohms
R503	VRD-MN2EBD182J	J	AA	1.8 kohms,1/8W
R504	VRD-MN2EBD333J	J	AA	33 kohms,1/8W
R509	VRD-MN2EBD101J	J	AA	100 ohm,1/8W
R510	VRD-MN2EBD681J	J	AA	680 ohms,1/8W
▽R514	RH-CX107AFZZ		AE	Posistor,8.2 ohms
R515	VRD-MN2EBD182J	J	AA	1.8 kohms,1/8W
R517,518	VRD-ST2EE221J	J	AA	220 ohms,1/4W
R520	VRD-MN2EBD104J	J	AA	100 kohm,1/8W
R521	VRD-MN2EBD224J	J	AA	220 kohms,1/8W
R522	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R523	VRD-MN2EBD183J	J	AA	18 kohms,1/8W
▽R551	RH-CX106ZAFZZ		AE	Posistor,8.2 ohms
R560	VRD-MN2EBD681J	J	AA	680 ohms,1/8W
R600	VRD-ST2CD102J	J	AA	1 kohm,1/8W
R601,602	VRD-MN2EBD123J	J	AA	12 kohms,1/8W
R603,604	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R605	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R608	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R611,612	VRD-MN2EBD272J	J	AA	27 kohms,1/8W
R613,614	VRD-MN2EBD104J	J	AA	100 kohm,1/8W
R615	VRD-ST2CD101J	J	AA	100 ohm,1/8W
R616	VRD-MN2EBD333J	J	AA	33 kohms,1/8W
R619	VRD-ST2CD222J	J	AA	2.2 kohms,1/8W
R621,622	VRD-MN2EBD222J	J	AA	2.2 kohms,1/8W
R623,624	VRD-MN2EBD104J	J	AA	100 kohm,1/8W
R625,626	VRD-MN2EBD102J	J	AA	1 kohm,1/8W

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
R627,628	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R629,630	VRD-MN2EBD223J	J	AA	22 kohms,1/8W
R631,632	VRD-ST2EE180J	J	AA	18 ohms,1/4W
R633,634	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R635,636	VRD-ST2CD101J	J	AA	100 ohm,1/8W
R637,638	VRD-ST2EE180J	J	AA	18 ohms,1/4W
R639,640	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R641,642	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R643,644	VRD-MN2EBD223J	J	AA	22 kohms,1/8W
R645,646	VRD-ST2CD103J	J	AA	10 kohm,1/8W
R647,648	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R649,650	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R651,652	VRD-MN2EBD224J	J	AA	220 kohms,1/8W
R653,654	VRD-MN2EBD105J	J	AA	1 Mohm,1/8W
R961	VRD-MN2EBD223J	J	AA	22 kohms,1/8W [For X]
R961	VRD-MN2EBD153J	J	AA	15 kohms,1/8W [For E]
R961	VRD-MN2EBD104J	J	AA	100 kohm,1/8W [For USA]
R960	VRD-MN2EBD123J	J	AA	12 kohms,1/8W
R953~958	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R943~952	VRD-ST2CD473J	J	AA	47 kohms,1/6W
R938	VRD-ST2CD475J	J	AA	4.7 Mohms,1/6W
R937	VRD-MN2EBD182J	J	AA	1.8 kohms,1/8W
R757,758	VRD-MN2EBD101J	J	AA	100 ohm,1/8W
R755,756	VRD-ST2CD331J	J	AA	330 ohms,1/6W
R753,754	VRD-MN2EBD333J	J	AA	33 kohms,1/8W
R713,714	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R712	VRD-ST2CD222J	J	AA	2.2 kohms,1/6W
R711	VRD-MN2EBD222J	J	AA	2.2 kohms,1/8W
R709	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R706	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R702	VRD-MN2EBD101J	J	AA	100 ohm,1/8W
R701	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R637,638	VRD-ST2EE180J	J	AA	18 ohms,1/4W
R635,636	VRD-ST2CD101J	J	AA	100 ohm,1/8W
R633,634	VRD-MN2EBD473J	J	AA	47 kohms,1/8W
R631,632	VRD-ST2EE180J	J	AA	18 ohms,1/4W
R629,630	VRD-MN2EBD223J	J	AA	22 kohms,1/8W
R627,628	VRD-MN2EBD103J	J	AA	10 kohm,1/8W
R1202	VRS-CY1JB103J	J	AA	1 Mohm,1/16W
R1201	VRS-CY1JB151J	J	AA	150 ohms,1/16W
R1166	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1164	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1163	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R1162	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R1161	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R1159,1160	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1158	VRS-CY1JB683J	J	AA	68 kohms,1/16W
R1157	VRS-CY1JB561J	J	AA	560 ohms,1/16W
R1156	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R1155	VRS-CY1JB223J	J	AA	22 kohms,1/16W
R1154	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R1153	VRS-CY1JB184J	J	AA	180 kohms,1/16W
R1149	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R1147,1148	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1146	VRS-CY1JB333J	J	AA	3.3 Mohms,1/16W
R1144	VRS-CY1JB391J	J	AA	390 ohms,1/16W
R1143	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R1142	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R1141	VRS-CY1JB103J	J	AA	1 kohm,1/16W
R1140	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R1136	VRS-CY1JB471J	J	AA	470 ohms,1/16W
R1134,1135	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R1133	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1132	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1131	VRN-CY1JD224D	J	AA	220 kohms,1/16W
R1129,1130	VRN-CY1JD473D	J	AA	47 kohms,1/16W
R1128	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1127	VRN-CY1JD224D	J	AA	220 kohms,1/16W
R1126	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1125	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1124	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1123	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1122	VRN-CY1JD124D	J	AA	120 kohms,1/16W
R1121	VRN-CY1JD222D	J	AA	22 kohms,1/16W
R1120	VRS-CY1JB222D	J	AA	22 kohms,1/16W
R1119	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R1118	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R1117	VRN-CY1JD124D	J	AA	120 kohms,1/16W
R1116	VRS-CY1JB100J	J	AA	10 ohm,1/16W
R1115	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R1114	VRS-CY1JB222J	J	AA	22 kohms,1/16W
R1113	VRS-CY1JB103J	J	AA	10 ohm,1/16W
R1112	VRS-CY1JB100J	J	AA	10 ohm,1/16W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
C532	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C551~554	VCKZPU1HF473Z	J	AA	0.047 µF,50V
C560	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C561,562	RC-GZA476AF1E	J	AB	47 µF,25V,Electrolytic
C567	RC-GZA476AF1A	J	AB	47 µF,10V,Electrolytic
C571	VCKZPU1HF103Z	J	AA	0.01 µF,50V
C601	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C603,604	RC-GZA474AF1H	J	AA	0.47 µF,50V,Electrolytic
C606	RC-GZA227AF1A	J	AB	220 µF,10V,Electrolytic
C607	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C608	RC-GZA104AF1H	J	AB	0.1 µF,50V,Electrolytic
C611,612	RC-GZA105AF1H	J	AB	1 µF,50V,Electrolytic
C613,614	VCCSMN1HL270J	J	AA	27 pF,50V
C615,616	VCKYMN1HB151K	J	AA	150 pF,50V
C617,618	VCCSMN1HL270J	J	AA	27 pF,50V
C621,622	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C623,624	RC-GZA107AF1A	J	AB	100 µF,10V,Electrolytic
C625	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C626	RC-GZA475AF1E	J	AB	4.7 µF,25V,Electrolytic
C701	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C702	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C705	VCCSPA1HL101J	J	AA	100 pF,50V
C706	VCKYBT1HB121J	J	AA	120 pF,50V
C707,708	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C751,752	RC-GZA106AF1C	J	AB	10 µF,16V,Electrolytic
C753,754	VCKYMN1HB561K	J	AA	560 pF,50V
C755	VCKZPU1HF473Z	J	AA	0.047 µF,50V
C757,758	VCKYMN1HB102K	J	AA	0.001 µF,50V
C759,760	VCKYMN1HB331K	J	AA	330 pF,50V
C901	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C902	RC-KZ0001AWZZ	J	AD	0.1 µF,25V
C903	VCFYDA1HA104J	J	AB	0.1 µF,50V,Polyester
C904	VCCSMN1HL470J	J	AA	47 pF,50V
C905	VCCCMN1HH120J	J	AA	12 pF (CH),50V
C906	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C907	RC-KZ0001AWZZ	J	AD	0.1 µF,25V
C908	RC-EZD105AF1H	J	AB	1 µF,50V,Electrolytic
C909	VCTYMN1EF223Z	J	AA	0.022 µF,25V
C914~917	VCKYMN1HB102K	J	AA	0.001 µF,50V
C918	VCCSPA1HL121J	J	AA	120 pF,50V
C1100,1101	VCKYTV1CF105Z	J	AB	1 µF,16V
C1104	VCCCCY1HH3R0C	J	AA	3 pF (CH),50V
C1105	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1108,1109	VCCCCY1HH8R0D	J	AA	8 pF (CH),50V
C1110	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1111	VCKYTQ1CB474K	J	AC	0.47 µF,16V
C1112	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1114,1115	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C1120	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1122	VCKYTQ1CB105K	J	AD	1 µF,16V
C1123	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1124	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1125	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1126	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1127	VCKYTV1CF105Z	J	AB	1 µF,16V
C1128	VCKYCY1HB391K	J	AA	390 pF,50V
C1129	VCKYCY1HB331K	J	AA	330 pF,50V
C1130	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C1131	VCKYCY1HB331K	J	AA	330 pF,50V
C1132,1133	VCKYTQ1CB105K	J	AD	1 µF,16V
C1134,1135	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1136,1137	VCKYCY1HB682K	J	AA	0.0068 µF,50V
C1138	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C1139	VCKYTV1CB104K	J	AA	0.1 µF,16V
C1140	VCKYTQ1CB105K	J	AD	1 µF,16V
C1141	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1142,1143	VCKYTQ1CB105K	J	AD	1 µF,16V
C1144	VCCCCY1HH6R0C	J	AA	6 pF (CH),50V
C1145	VCKYCY1CB333K	J	AA	0.033 µF,16V
C1146	VCKYTQ1CB105K	J	AD	1 µF,16V
C1147	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1148	VCCCCY1HH2R0C	J	AA	2 pF (CH),50V
C1201	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C1202	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1203	VCKYTV1CF105Z	J	AB	1 µF,16V
C1204,1205	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C1206	VCKYTV1CF105Z	J	AB	1 µF,16V
C1209,1210	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1211	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1213	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C1214	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C1216	VCCCCY1HH470J	J	AA	47 pF (CH),50V

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C1219	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C1251	VCKYCY1CB273K	J	AA	0.027 µF,16V
C1252	VCCCTV1HH121J	J	AA	120 pF (CH),50V
C1253~1255	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1301	VCKYTV1CF105Z	J	AB	1 µF,16V
C1302~1304	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1305	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1306	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C1401	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1403	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C1404	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1405	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1406	VCKYTV1CF105Z	J	AB	1 µF,16V
C1407,1408	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1421~1424	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1460	VCKYTV1CF105Z	J	AB	1 µF,16V
C1601	VCKYTV1CF105Z	J	AB	1 µF,16V
C1602	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1604	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1605	VCEAPS106AF1C	J	AB	10 µF,16V,Electrolytic
C1650,1651	VCKYCY1HB332K	J	AA	0.0033 µF,50V
C1652,1653	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1654,1655	VCKYCY1HB472K	J	AA	0.0047 µF,50V
C1656,1657	VCKYCY1HB562K	J	AA	0.0056 µF,50V
C1658,1659	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1661	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1700	VCKYTQ1CF225Z	J	AB	2.2 µF,16V
C1701	VCKYTV1CF105Z	J	AB	1 µF,16V
C1702	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1703	VCEAPS476AF0G	J	AC	47 µF,4V,Electrolytic
C1704,1705	VCCCCY1HH181J	J	AA	180 pF (CH),50V
C1706,1707	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1708	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1709	VCKYCY1CB223K	J	AA	0.022 µF,16V
C1710	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1711	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1712	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1713	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1714	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1715	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1716,1717	VCKYTV1CF224Z	J	AB	0.22 µF,16V
C1718	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1722	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1724	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1728,1729	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1730	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1733,1734	VCEAPS107AF1A	J	AD	100 µF,10V,Electrolytic
C1735	VCCSCY1HL821J	J	AA	820 pF,50V
C1736,1737	VCCCCY1HH180J	J	AA	18 pF (CH),50V
C1738	VCCSCY1HL821J	J	AA	820 pF,50V
C1741	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1742,1743	VCEAPS476AF0G	J	AC	47 µF,4V,Electrolytic
C1804	VCKYCY1HB102K	J	AA	1000 pF,50V
C1805	RC-EZ1623AFZZ	J	AF	22 µF,10V,Electrolytic
C1808	VCEAPS107AF1C	J	AC	100 µF,10V,Electrolytic
C1809	VCKYTV1CF105Z	J	AB	1 µF,16V
C1810	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C1811	VCCCCY1HH221G	J	AB	220 pF (CH),50V
C1819	RC-EZ1614AFZZ	J	AE	33 µF,6.3V,Electrolytic
C1820	VCKYCY1HB152K	J	AA	0.0015 µF,50V
C1825	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1826	VCKYTV1CB474K	J	AC	0.47 µF,16V
C1827	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1828	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1829	VCKYTV1EF104Z	J	AA	0.1 µF,25V
C1830	VCEAPS226AF0G	J	AC	22 µF,4V,Electrolytic
C1831	VCKYTV1CF105Z	J	AB	1 µF,16V
C1832	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C1833	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C1834	RC-EZ1634AFZZ	J	AF	15 µF,16V,Electrolytic
C1835	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C1836	VCCCCY1HH680J	J	AA	68 pF (CH),50V
C1837	VCKYTV1CF105Z	J	AB	1 µF,16V
C1900	VCKYTQ1CB334K	J	AC	0.33 µF,16V
C1901	VCKYTV1CF105Z	J	AB	1 µF,16V
C1902	VCKYTV1CF474Z	J	AB	0.47 µF,16V
C1903	VCKYTV1CF105Z	J	AB	1 µF,16V
C1913	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C1915,1916	VCKYCY1HB102K	J	AA	1000 pF,50V
C1927	VCKYCY1CB473K	J	AA	0.047 µF,16V
C1931	VCKYTV1CF105Z	J	AB	1 µF,16V
C1951	VCKYCY1CB473K	J	AA	0.047 µF,16V

When an error message is displayed, proceed as follows:

Error messages	Meaning	Remedy
NO DISC	• A disc has not been loaded. • The disc data cannot be read.	• Load a disc. • Reload the disc.
DISC ERROR	• The disc is damaged or there is no TOC on the disc.	• Reload the disc or replace it.
BLANK MD	• Nothing is recorded.	• Replace the disc with a recorded disc.
00 0:00	• Music is not being recorded.	
? DISC	• The data contains an error.	• Replace the disc with another recordable disc.
TOC ERROR	• The disc has a large amount of damage.	
DISC FULL	• The disc is out of recording space.	
PLAYBACK MD	• You tried to record on a playback-only disc.	• Replace it with a recordable disc.
PROTECTED	• The disc is write protected.	• Move the write protection tab back to its original position.
TOC FULL	• There is no space left for recording character information (track names, disc names, etc.)	• Replace it with another recordable disc.
Can't REC	• Recording cannot be performed correctly due to vibration or shock in the unit.	• Re-record.
Din UNLOCK	• Poor connection of the optical digital cable • Digital recording was attempted at a sampling frequency other than 44.1 kHz.	• Connect the optical digital cable securely. • Record using the analogue cable.
Can't COPY	• No copy can be made because of the SCMS copyright system.	• Record using the analogue cable.
Can't EDIT	• A track cannot be edited.	• Change the stop position of the track and then try editing it.
TEMP OVER	• The temperature is too high.	• Turn off the power, and wait for a while.
DEFECT	• Since this disc has scratches on it, the recording operation was skipped.	• Replace the disc with another recordable disc. • Turn off the power and then turn it back on.
NAME FULL	• The number of characters for the disc name or track name exceeds 100.	• Shorten the disc or track name.
MECHA ERR** (*:Number or symbol)	• There is a mechanical problem and the disc is not working properly.	• Turn off the power, and press the EJECT button.
NOT AUDIO	• The data recorded on this disc is not audio data.	• Select another track. • Replace the disc.
U TOC W ERR	• The TOC information could not be created properly due to a mechanical shock or to scratches on the disc.	• Turn off the power, and try to write the TOC again. (Remove any source of shock or vibration whilst writing.)
U TOC ERR* (*: Number or symbol)	• The TOC information on this disc does not meet the MD specifications or it cannot be read.	• Replace it with another disc. • Erase all the data, and try recording.

ADJUSTMENT

1. Preparation for ajustment

Test disc

	Type	Test disc	Parts No.	Price Code
1	High reflection disc	TGYS1 (SONY)	RRCDT0101AFZZ	CB
2	Low reflection disc	Recording minidisc	UDSKM0001AFZZ	AZ
3	————	Head adjusting transparent disc	RRCDT0103AFZZ	BK

Extension cable (See Fig. 18-3)

	Type	Parts No.	Price Code
1	Extension PWB for Servicing	RUNTK0385AFZZ	BS
2	Extension Connector (2 Pin)	QCNWK0059AFZZ	AF
3	Extension Cable (26 Pin)	QCNWK0038AFZZ	AF
4	Extension Connecter (5 Pin)	QCNWK0060AFZZ	AH
5	Extension Cable (5 Pin)	QCNWK0061AFZZ	AK
6	Extension Cable (24 Pin)	QCNWK0035AFZZ	AN
7	Extension Cable (8 Pin)	QCNWK0086AFZZ	AM

2. Test mode

Test mode setting

Load the playback disc 1 (high reflection disc) or the record disc 2 (low reflection disc). Holding down the ENTER button and PLAY/PAUSE button in power OFF state, press the RESET button.

As a result the power supply of the set is turned on, the set enters the TEST mode, and the following display indication appears.

A: TESTX1 ✳✳
TEST

B: AUTO
TEST

✳✳Represents version of MD microcomputer.

Entering the specific modes

Whenever the DISPLAY button is pressed while the display is in the AUTO state, the mode is changed as follows.

AUTO → RESULT → MANUAL

• Test mode canceling procedure

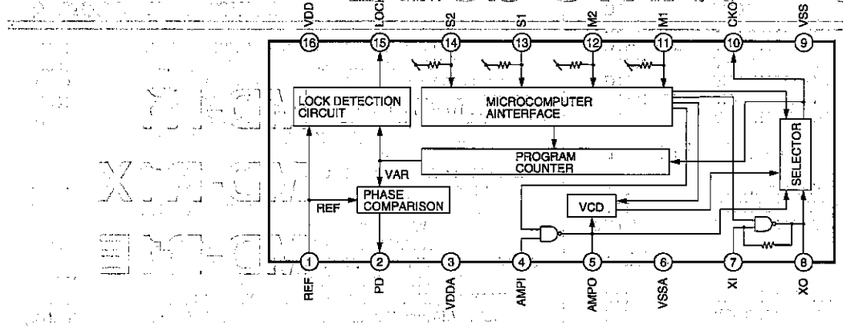
•Press the RESET button.

Or unplug the AC cord from the socket. Thereby the set exits the TEST mode.

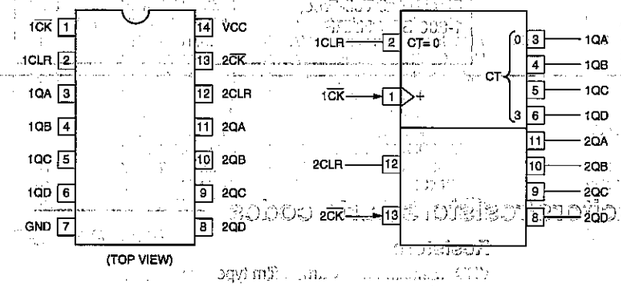
• Test Mode

1. AUTO Mode	• Automatic adjustment is performed. (After adjustment the grating adjustment mode is set.) • Set value is output through the display interface. • Continuous playback is performed (error rate display).
2. RESULT Mode	• Temperature is displayed. • The setting is displayed. • Set value is changed manually (in servo OFF state).
3. MANUAL Mode	• Seeing the displayed measurement value/set value, make manualadjustment to set values within the allowable range. • Continuous playback is performed (error rate display).
4. INNER Mode	• Determine the position where the INNER switch is turned on.(only high reflection disc.)
5. JUNP Mode	• 1 line, 10 lines or 400 lines manual jump is performed.
6. TEST/PLAY Mode	• Continuous playback from the specified address is performed. • C1 error rate measurement
7. TEST/REC Mode	• Continuous record from the specified address is performed. • Change of record laser output

IC1907 VHiTC9246F/-1 (TC9246F)



IC1908 VHi74VHC393F1 (74VHC393F)



IC1911 VHi74VHC74F-1 (74VHC74F)

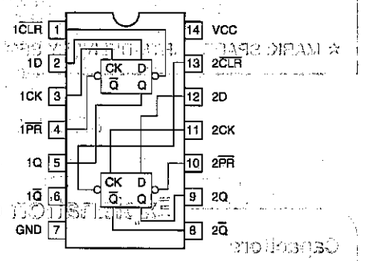


Figure 61-1 BLOCK DIAGRAM OF IC

WIRING OF PRIMARILY SUPPLY LEADS (FOR MD-R1E ONLY)

If any one of the bands shown in Fig. 61-2 is removed for some reason, be sure replace it to the original position and same appearance as berore.

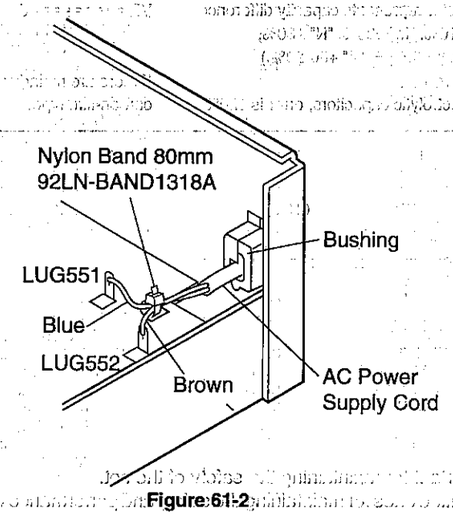
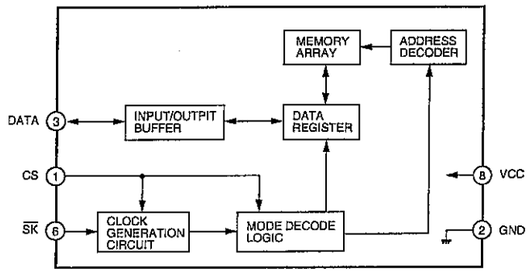
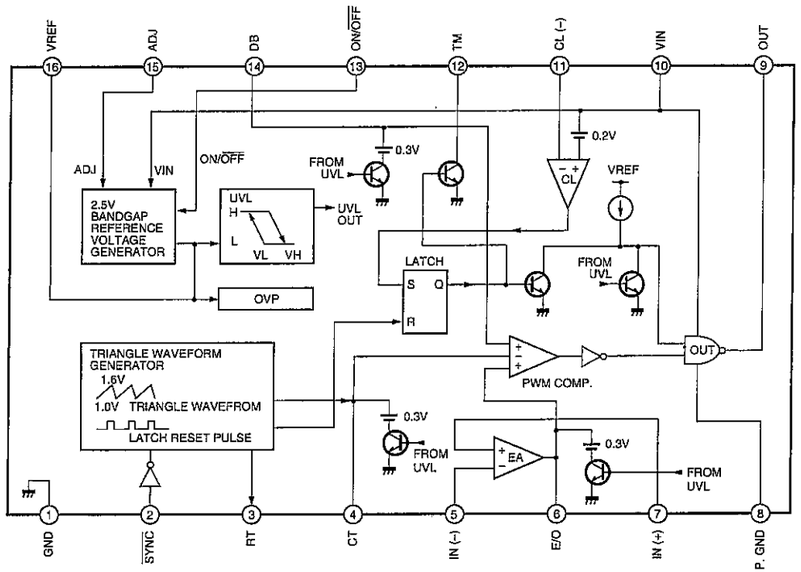


Figure 61-2

IC1402 VHiS2900AFE-1 (S2900AFE)



IC1801 VHiHA16114F-1 (HA16114F)



IC1802 VHiNJM2403M-1 (NJM2403M)

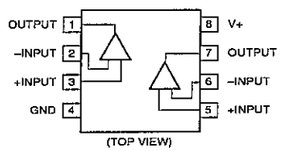


Figure 60 BLOCK DIAGRAM OF IC

1. AUTO Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Once press the Display button.	AUTO menu mode	[AUTO]
Step 3	Once press the Play button.	Slide shift to innermost periphery and start of automatic adjustment • When the high reflection disc is used, ✳✳✳ changes as follows TEO→FEO→Hfg→TRC→HTG→HTB→HFG • When the low reflection disc is used, ✳✳✳ changes as follows TEO→FEO→Lfg→TRC→LTG→LTB→ LFG→GTL→TRC→GTG→GTB→LFG	[✳✳✳ : ○○ ●●]
Step 4	If adjustment is OK, the process proceeds to Step 5. If adjustment is NG, the process proceeds to Step 9.		
Step 5	End of adjustment		[COMPLETE]
Step 6	Once press the Play button. Press the Stop button.	Step 7 Step 8	
Step 7	Continuous playback (pit section) Continuous playback (groove section)		[s□□□□c△△△△] [a□□□□c△△△△]
Step 8	Once press the Stop button.	Test mode STOP state	[AUTO]
Step 9	Adjustment status output	• Adjustment NG: When TEO or FEO measured value is out of range, adjustment is disabled or focus ON is disabled.	[Can't ADJ.]
Step 10	Once press the Stop button.	Test mode STOP state	[AUTO]

• ✳✳✳: Adjustment name, ○○: Measurement name, ●●: Set value, □□□□: Address, △△△△: C1 Error

2. RESULT Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Press the Display button twice.	RESULT menu mode	[RESULT]
Step 3	Press the Play button.	Measured value display: Temperature	[TMP: ◆◆]
Step 4	Press the Display button.	Measured value display: Tracking error offset	[TEO: ○○]
Step 5	Press the Display button.	Measured value display: Focus error offset	[FEO: ○○]
Step 6	Press the Display button.	Measured value display: High reflection focus gain	[HFG: ●●]
Step 7	Press the Display button.	Measured value display: High reflection pit tracking gain	[HTG: ●●]
Step 8	Press the Display button.	Measured value display: High reflection pit tracking error balance	[HTB: ●●]
Step 9	Press the Display button.	Measured value display: Low reflection focus gain	[LFG: ●●]
Step 10	Press the Display button.	Measured value display: Low reflection pit tracking gain	[LTG: ●●]
Step 11	Press the Display button.	Measured value display: Low reflection pit tracking error balance	[LTB: ●●]
Step 12	Press the Display button.	Measured value display: Low reflection TOTAL signal level	[GTL: ●●]
Step 13	Press the Display button.	Measured value display: Low reflection groove tracking gain	[GTG: ●●]
Step 14	Press the Display button.	Measured value display: Low reflection groove tracking error balance	[GTB: ●●]
Step 15	Press the Stop button.	RESULT menu mode	[RESULT]

• ○○ : Measurement name, ●●: Set value, ◆◆: Temperature code
• Pressing the REC button results in reversing.
• When the JOG SW is turned in + direction while the setting is displayed, the setting increases, and the new setting is stored in RAM.
• When the JOG SW is turned in - direction while the setting is displayed, the setting decreases, and the new setting is stored in RAM.

● Lead-in switch position measurement mode (Test Disc 1 is used)

Measurement with high reflection disc (check when the mechanism switch was replaced).

Step No.	Setting Method	Remarks	Display	
			Disc for record	Disc for playback
Step 1	Test mode start	Servo OFF (Power ON)	AUTO	AUTO
Step 2	Once press the TOC Edit button.		Operation is disabled if disc for record is in serted.	INNER
Step 3	Once press the Play/ Pause button.	The sub-code cluster value of Read-in switch position is displayed.		[s□□□ a△△△]

Note : Adjust the lead-in switch position at SUBQ FF85 to FFD2.

1. Loosen the three screws (A) fixing the mechanism switch PWB.
2. Pressing the mechanism switch PWB in the arrow direction, retighten the screw. Then, measure again the position of lead-in switch.
   After position adjustment fix the mechanism switch PWB with the three screws (A). (See Figure 16.)

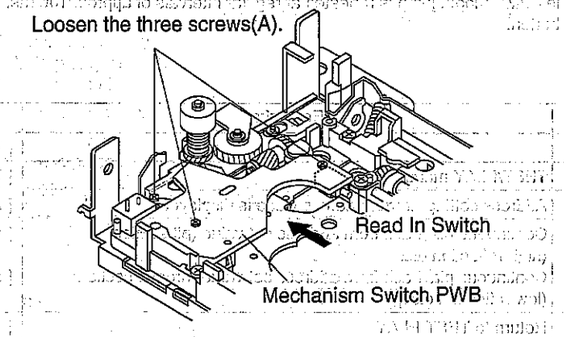


Figure 16

● Forced rotation of loading motor

While the display indication is in AUTO and EJECT state, the loading motor can be forcibly rotated by turning the Jog dial.

IC1401 RH-iX2568AFZZ (IX2568AF):MD System Microcomputer (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	MINF	Input	Disc classification detect input
2	TESTK1	Input	Test key input 1
3	TESTK2	Input	Test key input 2
4	HINF	Input	Mechanism/Head location input
5	AVSS	–	Ground terminal
6	TEST	Input	Input for test, usually connected ground
7*	X2	Output	Not used
8	X1	Input	Connected to power supply 2.8V
9	VSS	–	Ground terminal
10	5.6448MHz	Input	5.6448MHz input
11*	XTAL	Output	Not used
12	RESET	Input	Reset input
13	NC	–	Not connection internally
14	MDRSW	Output	MDRSW output
15	HFON	Output	High frequency super position ON/OFF control output
16	HDON	Output	Magnetic head current ON/OFF control output
17	LD+	Output	Loading motor + control output
18	LD-	Output	Loading motor – control output
19	INNSW	Input	Inner switch detection input
20*	FSW2	Output	Not used
21	FSW1	Output	Switch power frequency selection
22	DINT	Input/Output	LSI interruption request signal
23	NC	–	Not connection internally
24	ST-ID	Input	Synchro record start input
25	SERCH	Input	Synchro record interrupt input
26	R/P	Output	Record /Play select output
27	DSENSE	Input	Encoder/Decoder LSI servo status detection signal
28	FOK	Input	Focus OK detection signal input
29	GFS	Input	Frame sync lock status input
30	CIN	Input	Track count signal input
31	SYD0	Input/Output	Encoder/Decoder LSI data bus terminal
32	SYD1	Input/Output	Encoder/Decoder LSI data bus terminal
33	SYD2	Input/Output	Encoder/Decoder LSI data bus terminal
34	SYD3	Input/Output	Encoder/Decoder LSI data bus terminal
35	SYD4	Input/Output	Encoder/Decoder LSI data bus terminal
36	SYD5	Input/Output	Encoder/Decoder LSI data bus terminal
37	SYD6	Input/Output	Encoder/Decoder LSI data bus terminal
38	SYD7	Input/Output	Encoder/Decoder LSI data bus terminal
39	SYRD	Output	Encoder/Decoder LSI register read pulse output
40	SYRS	Output	Encoder/Decoder LSI register selection output
41	SYWR	Output	Encoder/Decoder LSI register write pulse output
42	ADJS	Output	Output for check
43	EPCS	Output	E^2PROM chip selection output
44	EPPD	Input/Output	E^2PROM serial data input/output
45	EEPK	Output	E^2PROM sirial clock output
46	DISC	Output	Disc classification detect output
47	PCNT0	Output	Power control output
48	PCNT1	Output	Power control output
49	LDON	Output	Laser ON/OFF control signal output
50	NC	–	Not connection internally
51*	ANLPTR	Output	Not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1301 VHiLR376411-1 (LR376411):ATRAC Companding (2/2)

Pin No.	Terminal Name	Input/Output	Function
51*	MCO27	Output	Microcomputer extension output port 2
52*	MCO26	Output	
53*	MCO25	Output	
54*	MCO24	Output	
55*	MCO23	Output	
56*	MCO22	Output	
57*	MCO21	Output	
58*	MCO20	Output	
59	MCI07	Input	Microcomputer extension input port
60	MCI06	Input	
61	MCI05	Input	
62	VCC	—	Power supply Power terminal
63	GND	—	Ground Ground terminal
64	MCI04	Input/Output	Microcomputer extension input port
65	MCI03	Input/Output	(input/output in test mode)
66	MCI02	Input/Output	
67	MCI01	Input/Output	
68	MCI00	Input/Output	
69	X44K	Input/Output	(Input/output in test mode)
70*	SDTO	Input/Output	
71	SDTI	Input/Output	
72	ADMUTE	Input/Output	
73	DMUTE	Input/Output	
74	GADDAT	Input/Output	
75	GDADAT	Input	
76	G74R	Input	General-use gate D-flip-flop
77	G74CK	Input	(input in test mode)
78	G74D	Input	
79	G74Q	Input/Output	
80*	G74QX	Input/Output	
81*	INVO	Input/Output	INV output — General-use gate
82	ANDO	Input/Output	AND output — * INV output Inverse output of signal connected to INV input
83*	ORO	Input/Output	OR output — * AND output AND output of signal connected to AND1 input 1 and AND input 2
84	ORI1	Input	OR input 1 — * OR output OR output of signal connected to OR input 1 and OR input 2
85	ORI2	Input	OR input 2 — (Input in test mode)
86	ANDI1	Input	AND input 1
87	VCC	—	Power supply Power terminal
88	GND	—	Ground Ground terminal
89	ANDI2	Input	AND input 2 — General-use gate
90	INVI	Input	INV input — * EXOR output Exclusive OR output of signal connected to EXOR input A and EXOR input B
91	EORA	Input	EXOR input A — * NAND output NAND inverse output of signal connected to NAND input A and NAND input B
92	EORB	Input	EXOR input B — (Input/output in test mode)
93*	EORO	Input/Output	EXOR output
94	NA1A	Input	NAND1 input A
95	NA1B	Input	NAND1 input B
96*	NA1O	Input/Output	NAND1 output
97	NA2A	Input/Output	NAND2 input A
98	NA2B	Input/Output	NAND2 input B
99	NA2O	Input/Output	NAND2 output
100*	–	–	Terminal not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

● Adjustment of magnetic head mounting position

- When the magnetic head and optical pickup have been replaced, be sure to adjust the mounting position.
- For easier adjustment of mounting position move the optical pickup to the center position, and then adjust the position.

1. Set the adjusting transparent disc 3.
2. Lower the magnetic head up-shift arm with your finger, and raise the magnetic head.
3. Viewing the set from above, make an adjustment so that the magnetic head aligns with the optical pickup objective lens.
   - •Radial direction: Slightly loosen the head fixing screw (A), and shift the magnetic head fitting to align the head with the pickup abjective lens.
   - •Circumferential direction: Turn the magnetic head circumferential adjustment nut (B), and adjust to align the head with the objective lens.
4. Make sure that there is a clearance as shown in Figure 17-1 and the magnetic head moves up and down smoothly.
5. After adjustment apply Screw Lock to the head fixing screw (A) and adjusted magnetic head circumferential adjusting screw (B).

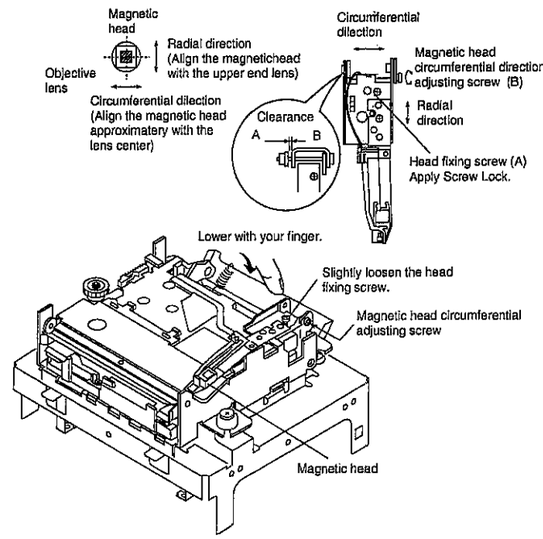

Magnetic head
Radial direction (Align the magnetichead with the upper end lens)
Objective lens
Circumferential dilection (Align the magnetic head approximatery with the lens center)
Circumferential dilection
Magnetic head circumferential direction adjusting screw (B)
Radial direction
Clearance
A
B
Head fixing screw (A) Apply Screw Lock.
Lower with your finger.
Slightly loosen the head fixing screw.
Magnetic head circumferential adjusting screw
Magnetic head

Figure 17-1

● Mechanism Adjustment

1. Optical pickup grating inspecting method

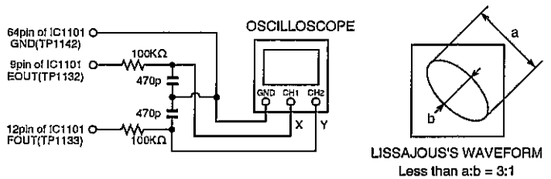


Figure 17-2 OPTICAL PICKUP GRATING DEVIATION MEASURING METHOD

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high refection MD disc ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spin motor, and make an adjustment, observing the Lissajous's wavefor.
2. After adjustment tighten the screws in arder of<1> , <2> ,< 3> .

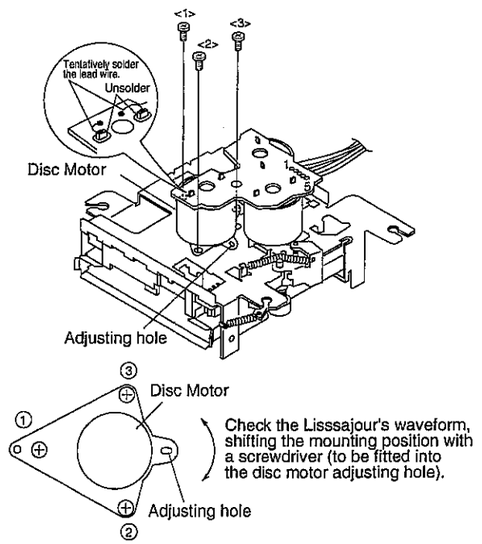


Figure 17-3

Error display	Errors	Corrective action
UTOC W ERROR	• An error occurred during UTOC rewriting, so that UTOC could not be rewritten corrctly.	• The disc has flaw. Replace the disc.
FOCUS ERROR	• When the disc was loading, the focus could not be set.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.
BLANK MD	• When UTOC was read, it was found that total TNO and the number of characters of NAME was 0.	• Check whether the disc is recordable one by preforming recording.
DEFECT	• Focus retract error occurred due to shock during REC-PLAY.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.

EXPLANATION OF MECHANISM ERROR

Error display	Errors
MECHA_ERR1_* MECHA_ERR2_* MECHA_ERR3_*	Ejection is not completed. Head-up is not completed. Head-down position 1.3 to 1.853V

HINF (IC1401 ④ PIN)

* = E	Ejection completed position	< 1.3 V
* = M	Horizontal midway position	> 3.06 V
* = L	Load completed position	1.853 ~ 2.48 V
* = D	Head-down position	1.3 ~ 1.853 V

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (2/2)

Pin No.	Terminal Name	Input/Output	Function
51	RAA8	Output	Address output ADR8 to external D-RAM
52	RAA9	Output	Address output ADR9 to external D-RAM
53	TEST0	Input	Input for test Usually connect to GND to use.
54	TEST1	Input	Input for test Usually connect to GND to use.
55*	C2PO	Output	Flag monitor output after C2 error correction
56*	ACRCER	Output	CRC error flag monitor output of ADIP
57	DIN	Input	Digital input signal
58	DOOUT	Output	Digital output signal
59	X1I	Input	Oscillation circuit input 33.8688MHz
60	X1O	Output	Oscillation circuit output 33.8688MHz
61	BCLK	Output	Music data shift clock
62	VDD1	—	Digital power terminal
63	DGND	—	Digital ground terminal
64	LRCK	Output	Music data L-ch/R-ch selection output
65	DFCK	Output	Clock 256 Fs for AD/DA converter digital filter
66	ADDATA	Input	Audio data input
67	DADATA	Output	Audio data output
68	X16MO	Output	Clock 16.9344MHz
69	SGLAT	Output	Compressed data latch clock
70	SGDAT	Input/Output	Compressed data input in record mode Compressed data output in playback mode
71	SGFLG	Output	Compressed data error flag output in playback mode
72	SGRQT	Input	Compressed data request signal
73	SGSHIFT	Output	Compressed data bit clock
74	DADDATA	Input/Output	Music data output in record mode Music data input in playback mode
75	ATBCLK	Output	Music data shift clock
76	ATLRCK	Output	Music data L-ch/R-ch selection output
77	X176KO	Output	Clock output f=175.4kHz (4 fs)
78	FODRF	Output	Focus servo forward output PWM
79	FODRR	Output	Focus servo reverse output PWM
80	TRDRF	Output	Tracking servo forward output PWM
81	TRDRR	Output	Tracking servo reverse output PWM
82	SLDRF	Output	Slide servo forward output PWM
83	SLDRR	Output	Slide servo reverse output PWM
84	SPDRF	Output	Slide servo forward output or spindle servo output PWM
85	SPDRP	Output	Slide servo reverse output or spindle rotation forward/reverse selection
86	EFMO	Output	EFM signal output in record mode. CIF (CI error flag) monitor output in playback mode.
87	VDD1	—	Digital power terminal
88	DGND	—	Digital ground terminal
89	AGAIN	Analog Output	A amp. gain adjustment output of RF LSI
90	AGAINS	Analog Output	A amp. gain selection output of RF LSI (High refrection <-> Low refrection)
91	BGAIN	Analog Output	B amp. gain adjustment output of RF LSI
92	BGAINS	Analog Output	B amp. gain selection output of RF LSI (High refrection <-> Low refrection)
93	EGAIN	Analog Output	E amp. gain adjustment output of RF LSI
94	EGAINS	Analog Output	E amp. gain selection output of RF LSI (High refrection <-> Low refrection)
95	FGAIN	Analog Output	F amp. gain adjustment output of RF LSI
96	FGAINS	Analog Output	F amp. gain selection output of RF LSI (High refrection <-> Low refrection)
97*	FBAL	Analog Output	Balance adjustment for focus error
98	TBAL	Analog Output	Balance adjustment for tracking error
99	TCGAIN	Analog Output	Gain adjustment output of tracking cross detecting amp.
100	VREF	Analog Output	Reference Voltage of RF LSI

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	FE	Analog Input	Focus error signal A-B
2	TE	Analog Input	Tracking error signal E-F
3	TOTAL	Analog Input	Focus signal A+B
4	DFCT	Analog Input	Disc defect detection signal E+F
5	AVCC	—	Analog power terminal
6	AGND	—	Analog ground terminal
7	WBI	Input	ADIP Wobble signal
8	TCRSO	Input	Track cross signal
9	ASY	Output	Positive logic output for EFM signal slice level control
10	ASYX	Output	Negative logic output for EFM signal slice level control
11	EFMI	Input	EFM signal input from RF amp.
12	VDD1	—	Digital power terminal
13	DGND	—	Digital ground terminal
14	RFLCT	Input	Signal to change gain A, B, E and F depending on reflection factor of disc
15	SENSE	Output	Servo status detection signal
16	FOK	Output	Focus OK detection signal
17	GFS	Output	Frame sync lock status output H: When the status corresponds to status of insert sync.
18	COUT	Output	Track cross signal output
19	MCCK	Output	Clock output for microcomputer Clock output is performed also in case of RSTX=0.
20	RSTX	Input	Chip reset input L: Reset
21	DINTX	Output	Output terminal to request interruption into system controller interface
22	SYD0	Output	System controller interface data bus terminal (LSB)
23	SYD1	Output	System controller interface data bus terminal
24	SYD2	Output	System controller interface data bus terminal
25	SYD3	Output	System controller interface data bus terminal
26	SYD4	Output	System controller interface data bus terminal
27	SYD5	Output	System controller interface data bus terminal
28	SYD6	Output	System controller interface data bus terminal
29	SYD7	Output	System controller interface data bus terminal (MSB)
30	SYRDX	Input	System interface register read pulse input
31	SYRS	Input	System controller interface register selection input
32	SYWRX	Input	System interface register write pulse input
33	RARASX	Output	Low address strobe signal output to external D-RAM
34	RACASX	Output	Column address strobe signal output to external D-RAM
35	RAWEX	Output	Data write enable signal output to external D-RAM
36	RAOEX	Output	Data output enable signal output external D-RAM
37	VDD2	—	DRAM interface power terminal
38	DGND	—	Digital ground terminal
39	RAD0	Input/Outout	Data input/output D0 (LSB) to and from external D-RAM
40	RAD1	Input/Output	Data input/output D1 to and from external D-RAM
41	RAD2	Input/Output	Data input/output D2 to and from external D-RAM
42	RAD3	Input/Output	Data input/output D3 (MSB) to and from external D-RAM
43	RAA0	Output	Address output ADR0 (LSB) to external D-RAM
44	RAA1	Output	Address output ADR1 to external D-RAM
45	RAA2	Output	Address output ADR2 to external D-RAM
46	RAA3	Output	Address output ADR3 to external D-RAM
47	RAA4	Output	Address output ADR4 to external D-RAM
48	RAA5	Output	Address output ADR5 to external D-RAM
49	RAA6	Output	Address output ADR6 to external D-RAM
50	RAA7	Output	Address output ADR7 to external D-RAM

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
- Parts marked with " ⚠ " (⊏ = = = ⊐) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW350	EJECT	OFF
SW351	STOP	OFF
SW352	PLAY/PAUSE	OFF
SW353	REC	OFF
SW354	REVIEW	OFF
SW355	CUE	OFF
SW356	ENTER	OFF
SW357	DISPLAY/CHARACTER	OFF
SW358	TIMER/DELETE	OFF
SW359	NAME. TOC EDIT	OFF
SW360	POWER	OFF
SW361	INPUT SELECT	OFF
SW771	RESET	OFF
SW901	JOG	OFF
SW1951A/B	DISC PROTECT/DISC MEDEA SENSOR	OFF
SW1953	LEAD IN	OFF
SW1954	MD PLAY	OFF
SW1955	MD REC	OFF
SW1956	LORDING	OFF

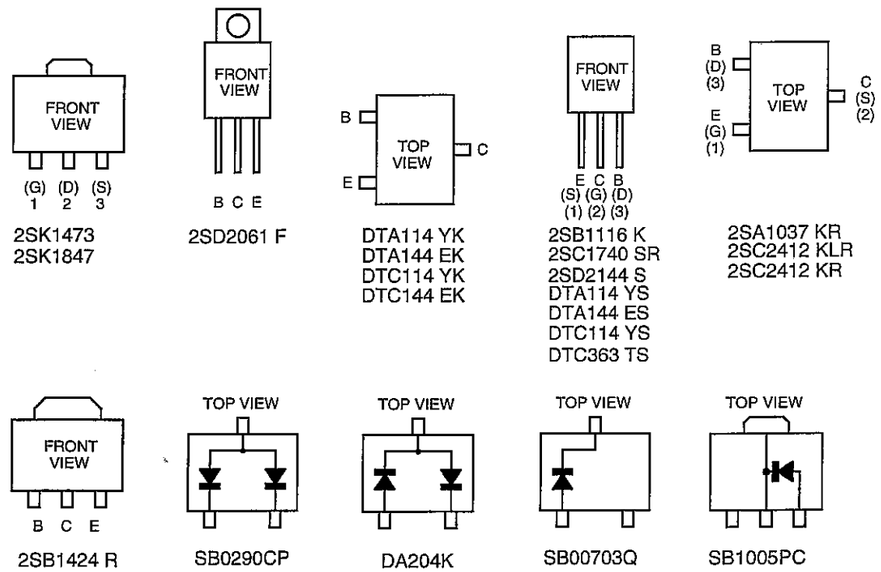


Figure 21 TYPES OF TRANSISTOR AND DIODE

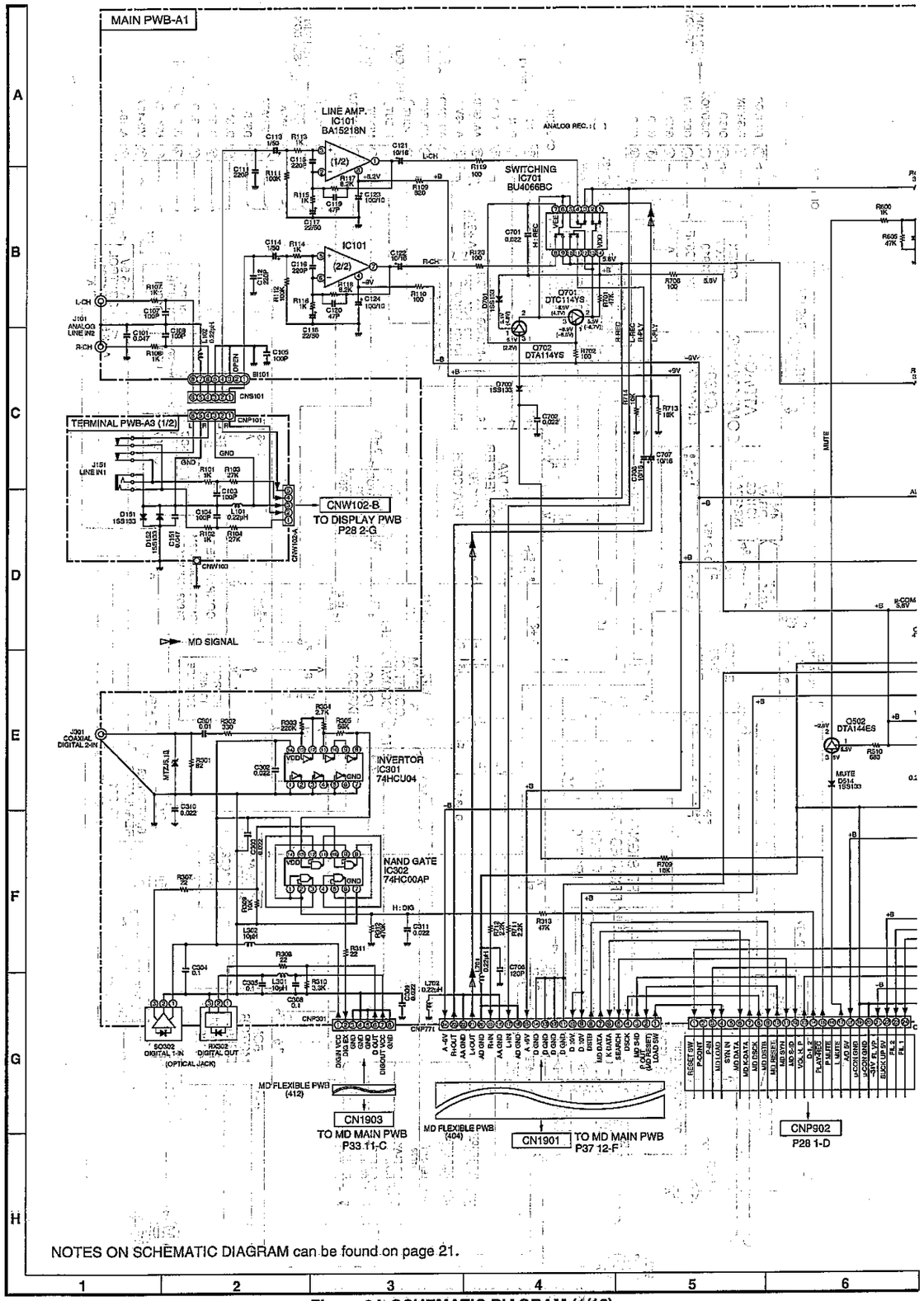


Figure 24 SCHEMATIC DIAGRAM (1/12)

FUNCTION TABLE OF IC

IC901 RH-iX0131AWZZ(M38197MA):System Microcomputer (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	P77/AN7	INT	Input	A/D input for destination setting Reset Check in case of power failure recovery
2	P76/AN6	KEY1	Input	A/D input
3	P75/AN5	L-MUTE	Output	LINE MUTE ON:L
4	P74/AN4	P-MUTE	Output	LINE MUTE ON:L
5*	P73/AN3		Output	L fixed
6*	P72/AN2		Output	L fixed
7*	P71/AN1		Output	L fixed
8	P70/AN0	PLAY-REC	Output	L output only during Rec and Rec Pause (only in case of analog input)
9	PB3	D-1, 2	Output	H:DIG1, L:DIG2
10	PB2/DA	VOL H. P	Output	DA output for HP volume control
11*	P57/SRDY		Input	L fixed
12	P56/SCLK	KEY2	Inout	A/D input
13	P55/SOUT	KEY3	Input	A/D input
14	P54/SIN3	JOG1	Input	JOG input
15	P53/SRDY3	JOG2	Input	JOG input
16	P52/SCLK2	(MD)S-ID	Output	S-ID output according to SYM-IN port
17	P51/SOUT2	(MD)SYN-OUT	Output	SYN-OUT output according to SYM-IN port
18	P50/SIN2	(MD)RESET	Output	MD reset output
19	P67/SRDY1	(MD)DSTB	Input	MD strobe input
20	P66/SCLK1	(MD)DSCK	Output	MD clock output
21	P65/SOUT1	(MD)K-DATA	Output	MD key data
22	P64/SIN1	(MD)MDDATA	Input	MD data input
23*	P63/CNTR1		Output	L fixed
24*	P62/CNTR0		Output	L fixed
25*	P61/PWM		Output	L fixed
26*	P60		Output	L fixed
27*	P47/T3OUT		Output	L fixed
28	P46/T1OUT	SYN-IN	Input	External syncro input
29	P45/INT1/ZCR	P-IN	Input	Power failure detection, zero cross detection
30	P44/INT4	P-CNT	Output	POWER ON:H
31*	P43/INT3		Output	L fixed
32	P42/INT2	RX-IN	Input	Remote control input
33*	P41		Output	L fixed
34	P40/INT0		Input	L fixed
35	RESET		Input	Resetting on L-H
36	XCIN		Input	32.768kHz, crystal connection
37	XCOUT		Output	32.768kHz, crystal connection
38	XIN		Input	8MHz, ceramic connection
39	XOUT		Output	8MHz, ceramic connection
40	VSS		–	Ground terminal
41*	P27		Output	L fixed
42	P26	(MD)LOAD	Input	MD LOAD SW detection, H-L = DISC IN
43*	P25		Output	L fixed
44*	P24		Output	L fixed
45-56	P23-10	DIG1-DIG12	Output	Digit output for FL
57-60	P07-04	DIG13-DIG16	Output	Digit output for FL
61-64	P03-00	SEG36-SEG33	Output	Segment output for FL
65-71	P37-32	SEG32-SEG26	Output	Segment output for FL
72	P30	SEG1	Output	Segment output for FL
73-80	P97-90	SEG2-SEG9	Output	Segment output for FL

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

• Focus servo cannot be actuated

Is waveform on the pin 7 of CNS1101 normal in the TEST mode focus gain rough adjustment step?
- No → Check waveform and connection of pins 17, 18 and 20 of IC1601, and pins 1, 2 and 3 of IC1602, and pins 78 and 79 of IC1201.
- Yes ↓

Is waveform on the pin 32 of IC1101 normal?
- No → Check soldering CNS1101 and IC1101. Replace the opbical pickup.
- Yes ↓

Is waveform on the pins 15 and 16 of IC1201 normal?
- No → Check soldering and connection of IC1201 and IC1101.
- Yes ↓

Check connection of pins 15 and 16 of IC1201, and pins 27 and 28 of IC1401, and check periphery of IC1401 and IC1201.

• Disc motor fails to rotate

Is waveform of pin 2 of IC1601 observed in the TEST mode focus gain rough adjustment step?
- No → Check connection of pins 5 and 6 of IC1603 and pins 84 and 85 of IC1201.
- Yes ↓

Is waveform of pins 11 and 12 of IC1601 and pins 3 and 4 of CNP1602 observed?
- No → Check soldering of IC1601 and CNP1602 disc motor (completed).
- Yes ↓

Does voltage on the positive and negative terminals disc motor change?

Yes ↓

Replace the completed disc motor M1952.

• Tracking servo cannot be actuated

Does waveform appear on the pins 80 and 81 of IC1201, pins 5, 6 and 7 of IC1602, pins15 and 16 of IC1601, and pins 4 and 6 of CNS1101 in the TEST mode focus gain adjustment step?
- No → Check soldering of IC1602, IC1601 and CNS1101.
- Yes ↓

Replace the optical pickup.

• Slide servo cannot be actuated.

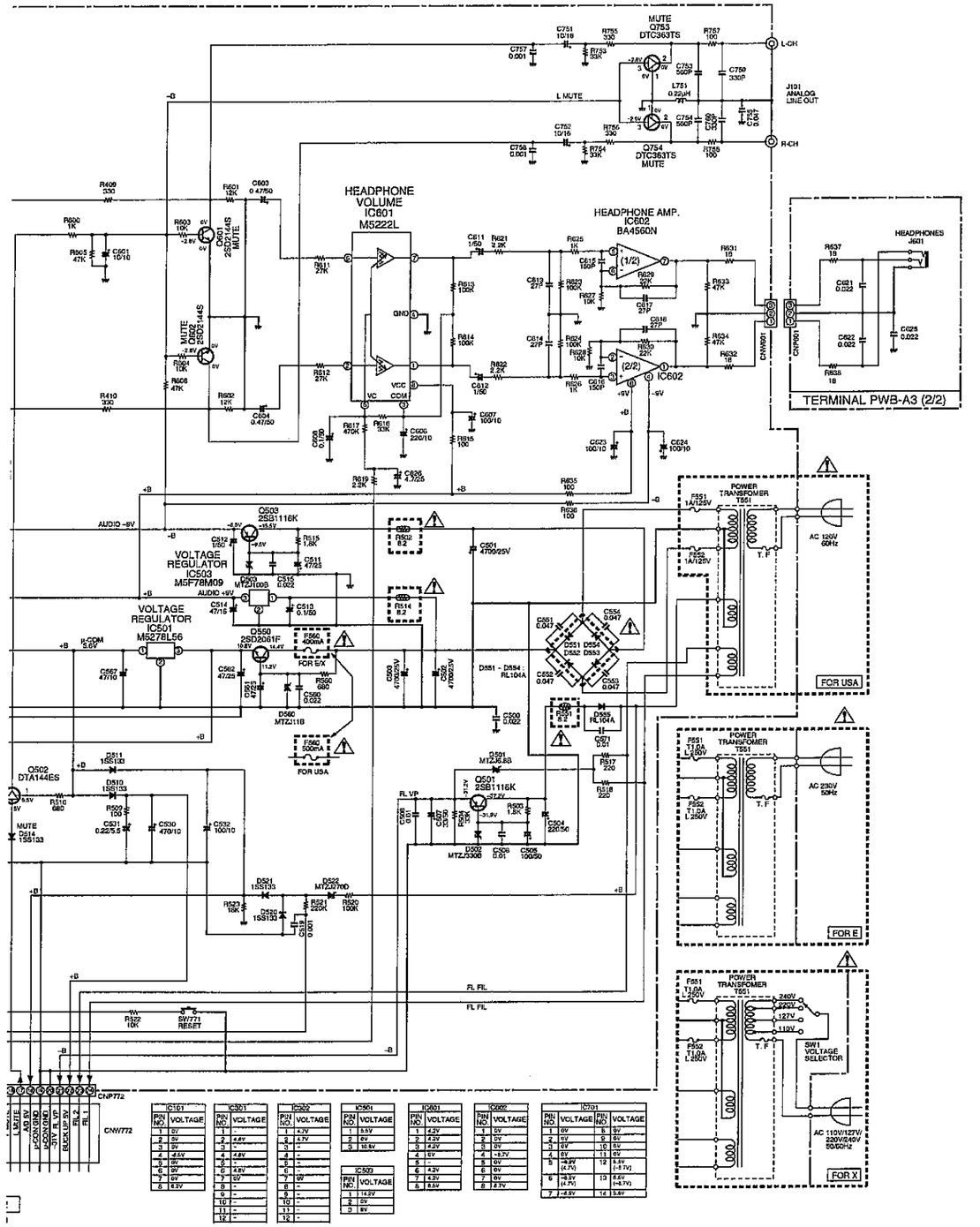
Is the pickup moved to the outer andinner periphery when the Cue/Review button is pressed in the TEST mode.
- Yes → Check Soldering of IC1101.
- No ↓

Does the setting of pin 24 of IC1601 change when the Cue/Review button is pressed?
- No → Check connection of pins 1 and 3 of IC1603 and pins 82 and 83 of IC1201.
- Yes ↓

Does the setting of pins 13 and 14 of IC1601 and pins 1 and 2 of CNP1602 change when the Cue/Review button is pressed?
- No → Check soldering of IC1601 and CNP1602.
- Yes ↓

Does voltage on the positive and negative terminals of slide motor change when the Cue/Review button is pressed?
- No → Check solder joint of slide motor. Check for wire breakage.
- Yes ↓

Replace the slide motor M1951.



7	8	9	10	11	12

Figure 25 SCHEMATIC DIAGRAM (2/12)

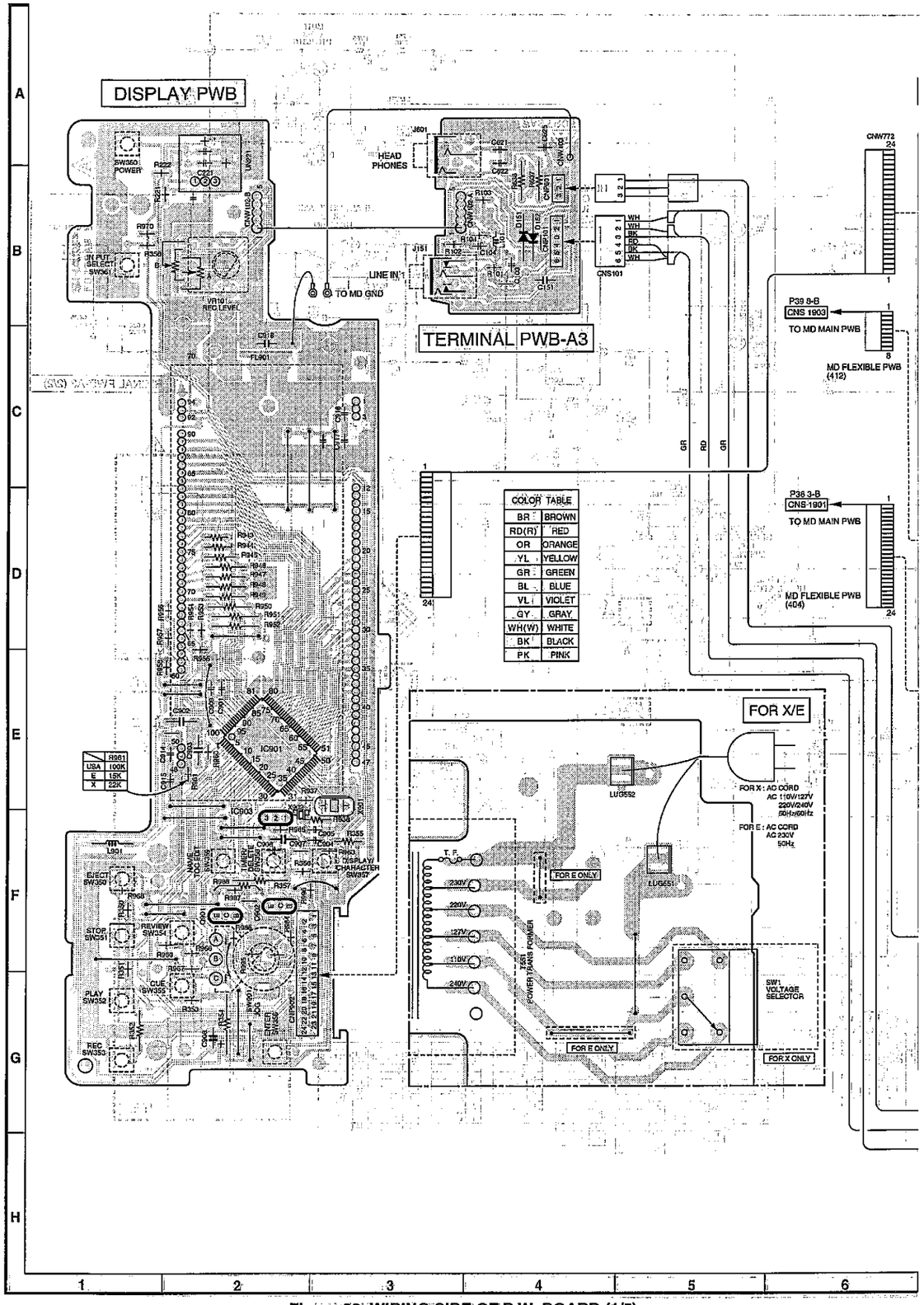


Figure 26 WIRING SIDE OF P.W. BOARD (1/5)

• Audio playback circuit

When no sound is output although play time display advance during playback in the normal mode

Does audio output waveform appear on the pins 21 to 24 of IC1701?
- No → Check the pins 71, 73 to 75 of IC1201, pins 29 to 32 and 35 of IC1701.
- Yes ↓

Does audio output waveform appear on the pins 21 and 23 of CNP1901?
- No → Check the IC1703.
- Yes ↓

Check the display PWB and main PWB

• Record/playback operation

Insert the low-reflection disc, and check audio output by playback operation in the normal mode, and then set the TEST/REC mode.

Record from start adress is disabled.
- Yes → Check whether disc is record-protected.
- No ↓

Does RF waveform appear on the pin 11 of IC1201 when playback is started after recording?
- Yes → Does output waveform appear on the pins 21 and 23 of CNP1901 in case of record in the normal mode?
- Yes ↓

Does the level of , pins 16 and 76 of IC1401, pin 22 of IC1101, and IC1251 change depending on state (record or playback)?
- No → Check periphery of IC1101 and IC1251.
- Yes ↓

Does RF pattern appear on the pin 11 of IC1201?
- No → Check soldering of IC1201.
- Yes ↓

Check soldering of IC1251, Q1251 to Q1254 and erase magnetic head flexible PWB.

Does output waveform appear on the pins 21 and 23 of CNP1901 in case of record in the normal mode?
- No ↓

Does input waveform appear on the pins 17 and 19 of CNP1901?
- No → Check the display PWB and main PWB.
- Yes ↓

Is input waveform observerd at the positive side of C1706 and C1707?
- No → Check soldering of C1706, C1707.
- Yes ↓

Check connection between IC1701 and CNP1901.

Continued from the preceding page

Is LTB*** or HTB*** within FE~02 in tracking error balance adjustment step? If not, check whether adjustment is enabled with Cue/Review button.
- No → Check whether the setting of pin 8 of IC1101, and pin 98 of IC1201 changes when the Cue/Review button is pressed.
- Yes ↓

Is servo actuated in focus gain rough adjustment step?
- No → Check as stated in item "Tracking servo cannot be actuated".
- Yes ↓

Is slide servo actuated in continuous playback step?
- No → Check as stated in item "Slide servo cannot be actuated".
- Yes ↓

Is CI error cluster counted up continuously in this step?
- No → Check the pin 41 of IC1101 and pin 7 of IC1201.
- Yes ↓

Proceed to item "Normal playback".

• Normal playback

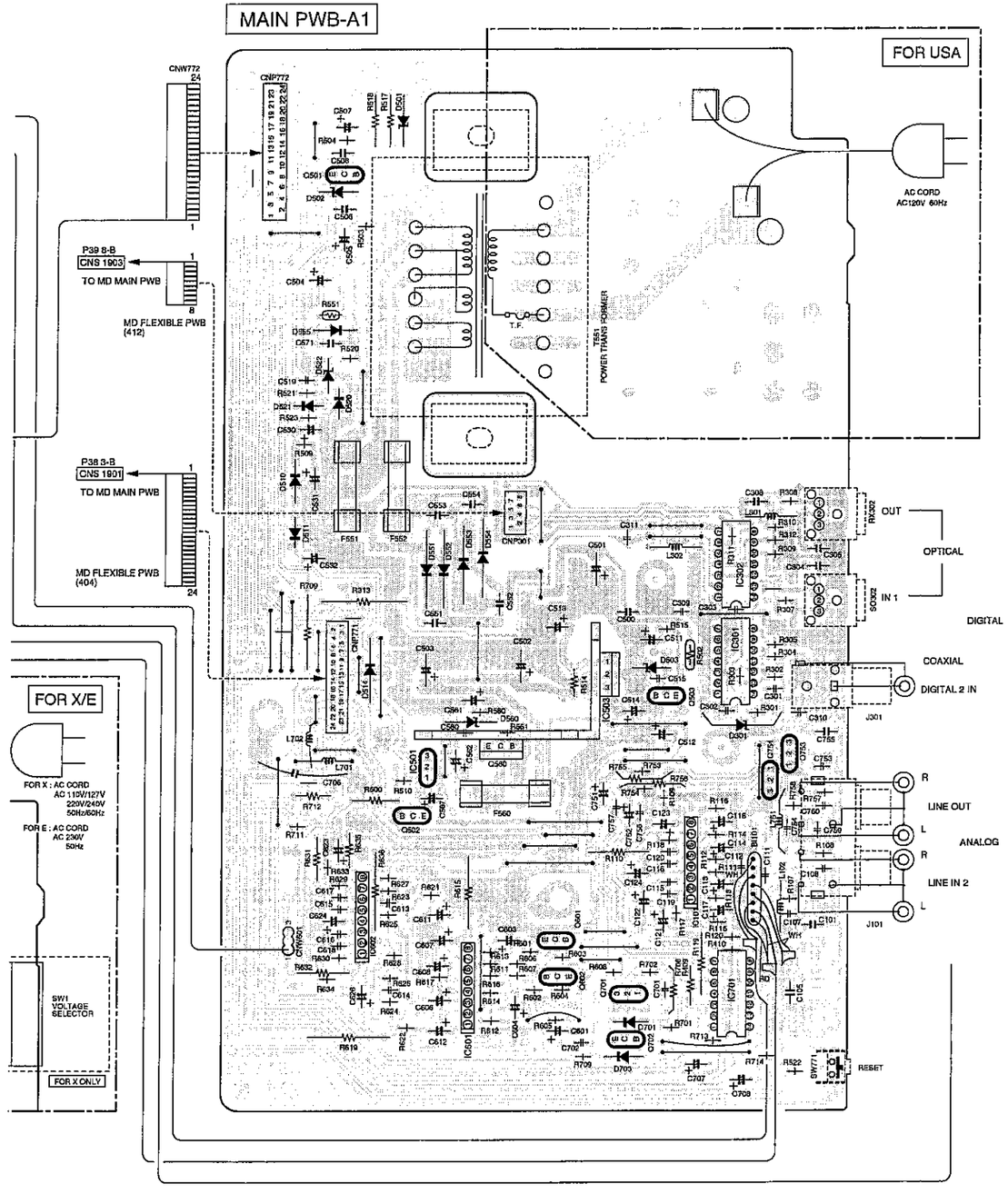
When continuous count-up of subcode or CI error cluster in the TEST mode has been proved to be normal.

Is initialization performed normally in high reflection disc playback mode?
- Yes → Does play time display advance?
  - No → Check the pins 15, 16, 17, 18 and 19 of IC1301.
  - Yes
- No ↓

Does disc rotate normally?
- No → Check whether the lead-in switch SW1953 is turned on when the pickup is on the innermost periphery in the TEST mode. (check whether the pin 19 of IC1401 in Low level.)
  - No → Check the solder joint of mechanism PWB and SW1953, and periphery of CNP1601, CNP1602A/B and CNP1901.
- Yes ↓

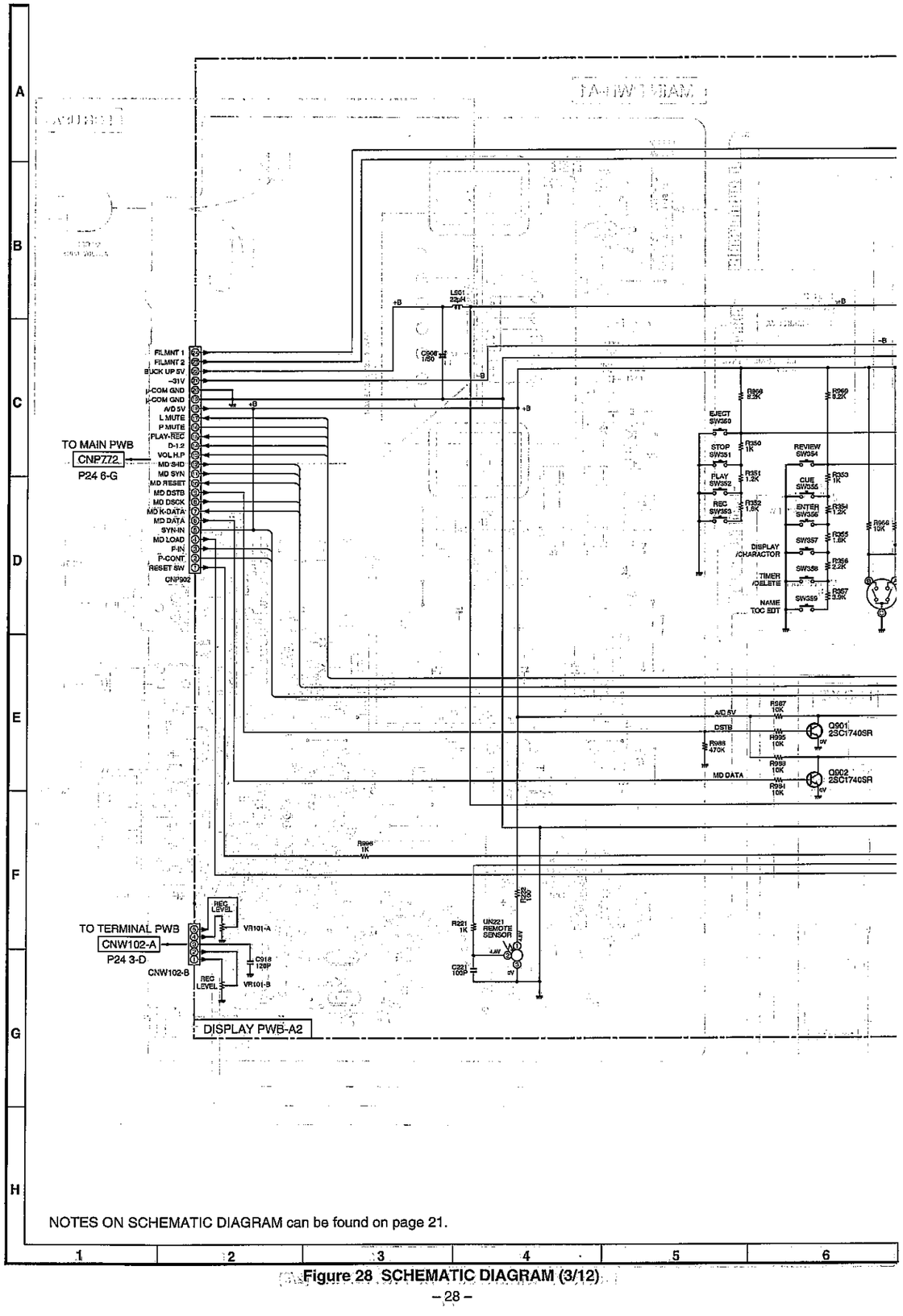
Is an attempt to read repeatedly the TOC section of low reflection disc made?
- No → The TOC section has not been recorded in the new disc. Replace the disc with recorded low reflection disc.
- Yes ↓

Check the position as stated in item "Lead-in Switch Position Measurement Mode", using the high reflection disc.



7	8	9	10	11	12

Figure 27 WIRING SIDE OF P.W. BOARD (2/5)



NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

Figure 28 SCHEMATIC DIAGRAM (3/12)

• Check in TEST mode

Insert a high reflection (low reflection) disc, and once perform automatic adjustment in AUTO mode, and then check in MANUAL mode.
Simultaneously observe waveforms of EFM(TP1112), FEOUT(TP1136), and TEOUT(TP1137).

Insert the high reflection disc, and after performing once automatic adjustment in the AUTO mode check in the MANUAL mode.

Insert the low reflection disc, and after performing once automatic adjustment in the AUTO mode check in the MANUAL mode.
(Locate near the center of optical pickup.)

Does the laser diode light in Laser lighting step?
Is laser power normal?
- No → Check the pin 20 of IC1101, pin 4 of IC1401, and Q1101, SW1951A/B, CNS1101.
- Yes ↓

Is focus access performed when focus gain rough adjustment is made?
- No → Check the pins 78 to 79 of IC1201, pins 17 and 18 of IC1601, and CNS1101.
- Yes ↓

Does the disc motor rotate in this step?
- No → Check as stated in item "Disc motor fails to rotate".
- Yes ↓

Check whether Ltg*** gives 00 indication in this step.
Check whether an indication of ✳00 or more appears when the Cue/Review button is pressed.
- No → Does the setting of pin 96 of IC1202 and pin 12 of IC1101 changes when the Cue/Review button is pressed?
Check waveform of pins 13 and 16 of IC1101.
- Yes ↓

Is focus servo actuated in the tracking gain adjustment step?
- No → Check as stated in item "Focus servo cannot be actuated".
- Yes ↓

Does the disc motor rotate at high speed in this step?
- No → For high reflection, check EFM waveform of pin 11 of IC1201.
For low reflection, check ADIP waveform of pin 7 of IC1201.
Check the pins 84 to 85 of IC1201, pins 2 to 26 of IC1601.
- Yes ↓

Is LTG*** or HTG*** within the range of 001 to 019 in the tracking gain adjustment step? If not, check whether adjustment is enabled with the Cue/Review button.
- No → Check whether the setting of pin 99 of IC1201 and pin 6 of IC1101 changes when the Cue/Review button is pressed.
- Yes ↓

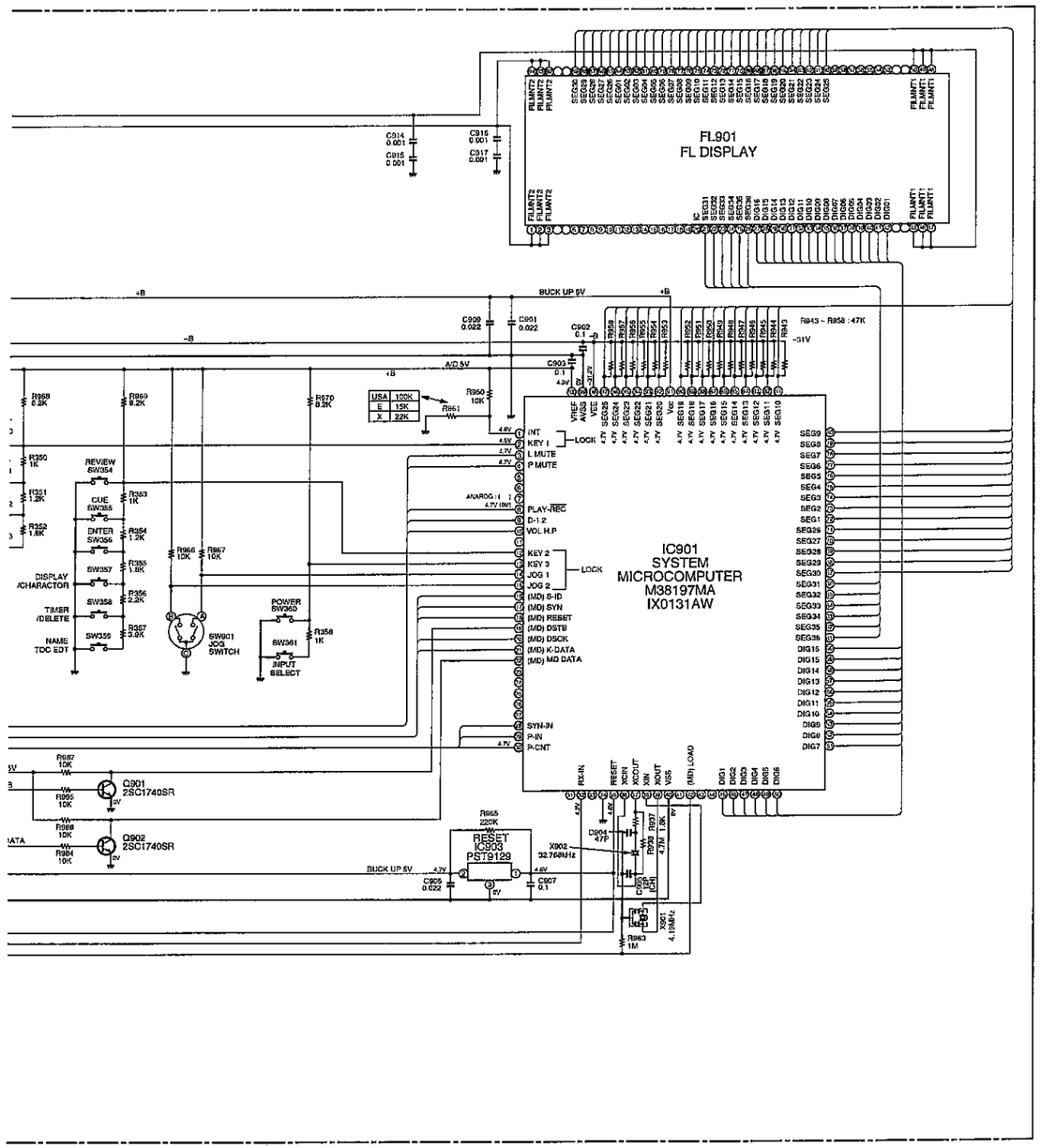
Continued on the next page.

• Disc loading is not normal

Is disc loaded when it is inserted?
- Yes
- No → Is the pin 4 of CNP1601 to Low?
  - No → Check CNP1601 and SW1956.
  - Yes → Is change observed on the pin 10 or 11 of IC1601?
    - No → Check the pin14 of IC1401.
    - No → Is change to the pin 4 of IC1601?
      - No → Check CNP1602 and IC1601.
      - Yes → Check the MD mechanism switch PWB.
    - Yes → Is disc ejected when the EJECT button is pressed?
      - No
      - Yes → The disc retracts soon after completion of disc ejection operation → Yes → Check CNP1601 and SW1956.

• Playback state cannot be set

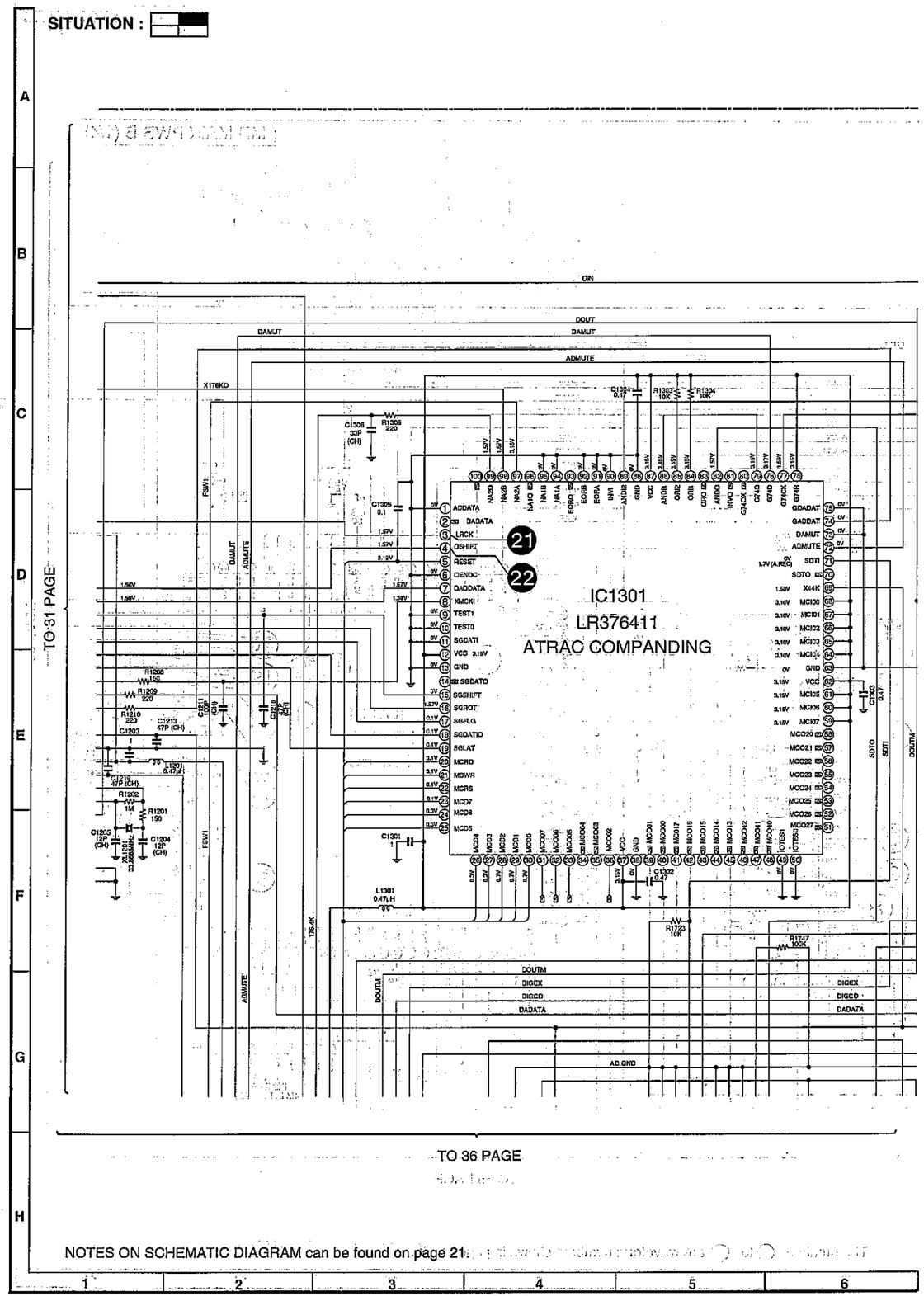
Is playback state unsettable for high reflection disc and low reflection disc?
- Yes → Proceed to "Check in TEST mode".
- No → Only the high reflection disc cannot be playback.
  - Yes → Is 1.3V ± 0.3V applied to the pin 1 of IC1401 in the TEST mode after the high reflection disc has been inserted?
    - Yes → Proceed to "Check in TEST mode".
    - No → Check SW1951A/B mechanism switch PWB and CNP1602.
- No → Only the low reflection disc cannot be playedback.
  - Yes → Is 1.3V ± 0.3V applied to the pin 1 of IC1401 after the low reflection disc has been inserted (record-enable state) ?
    - Yes
    - No → Check SW1951A/B mechanism switch PWB and CNP1602.



7	8	9	10	11	12

Figure 29 SCHEMATIC DIAGRAM (4/12)

SITUATION :

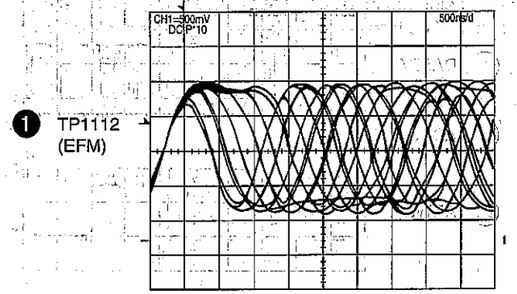


NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

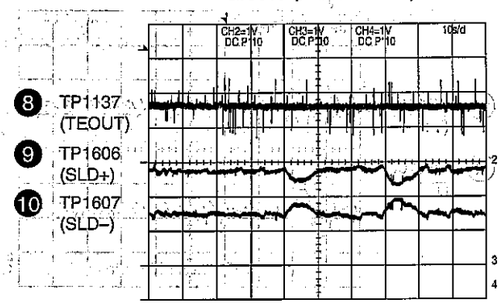
Figure 32 SCHEMATIC DIAGRAM (7/12)

WAVEFORMS OF MD CIRCUIT

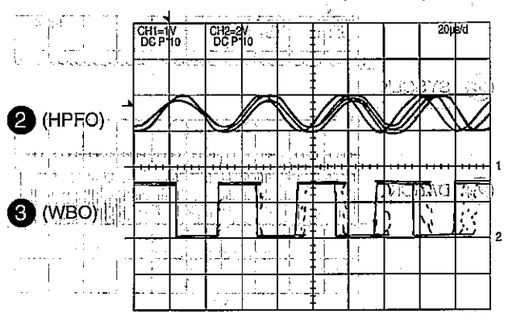
PLAY Condition



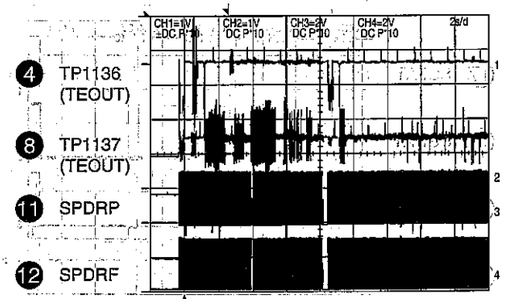
Groove (PLAY MODE)



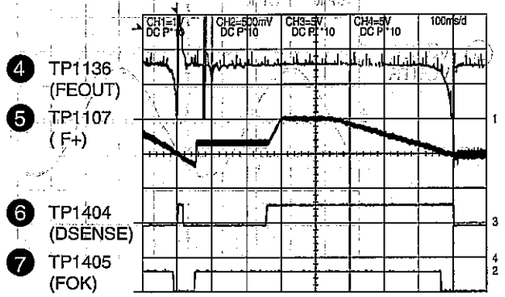
PLAY Condition(NO Disc)



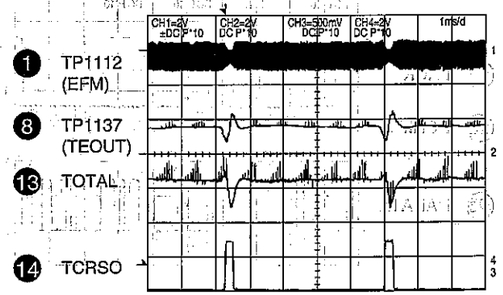
POWER OFF → STAND–BY → PLAY



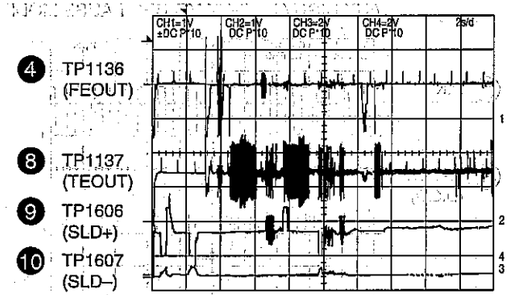
STAND–BY → PLAY



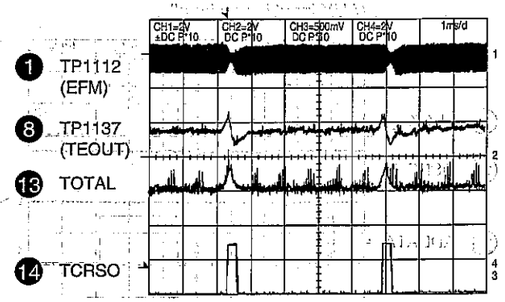
PIT (PLAY MODE)



POWER OFF → STAND–BY



Groove (PLAY MODE)



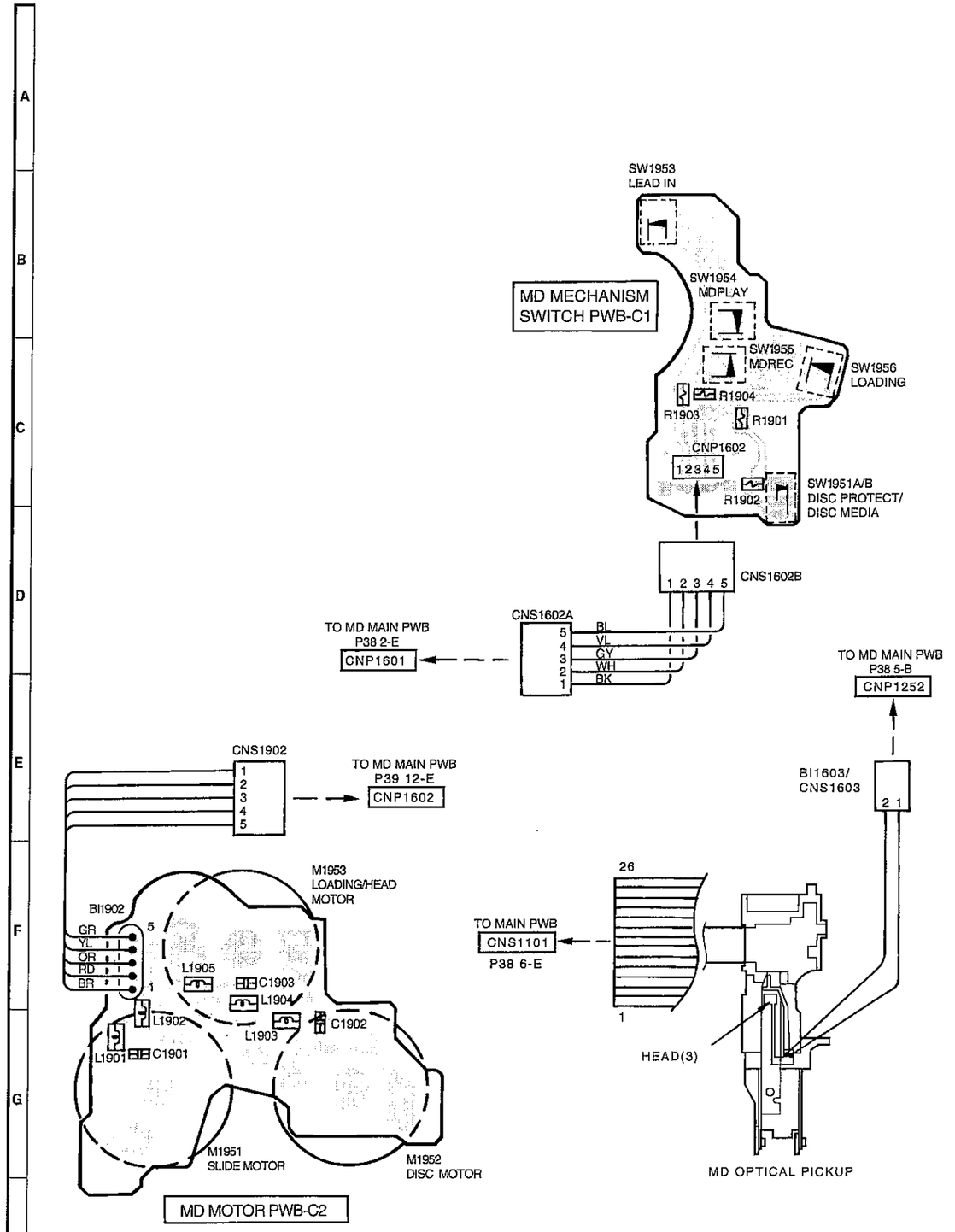
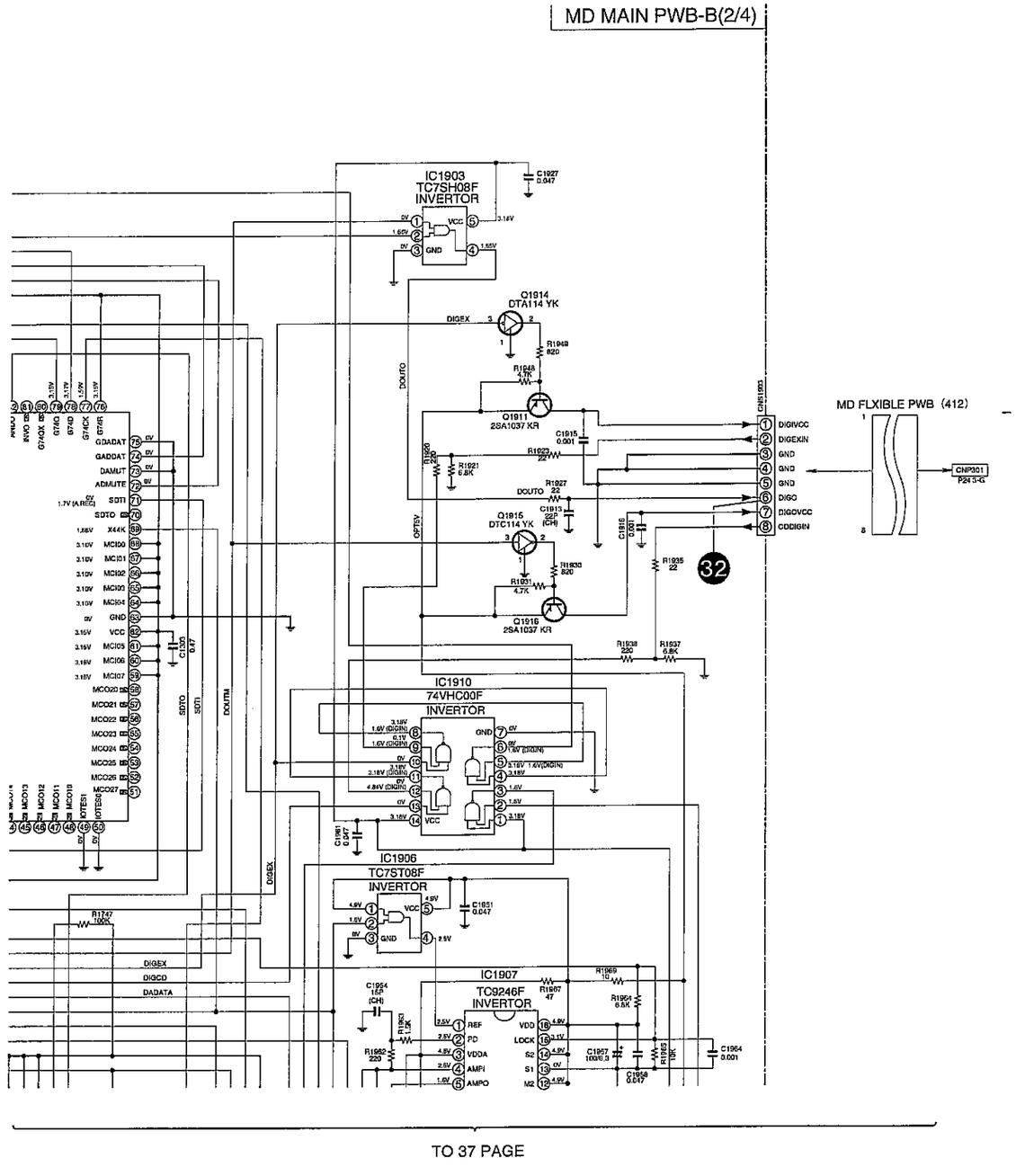


Figure 40 WIRIMG SIDE OF P.W.BOARD (5/5)

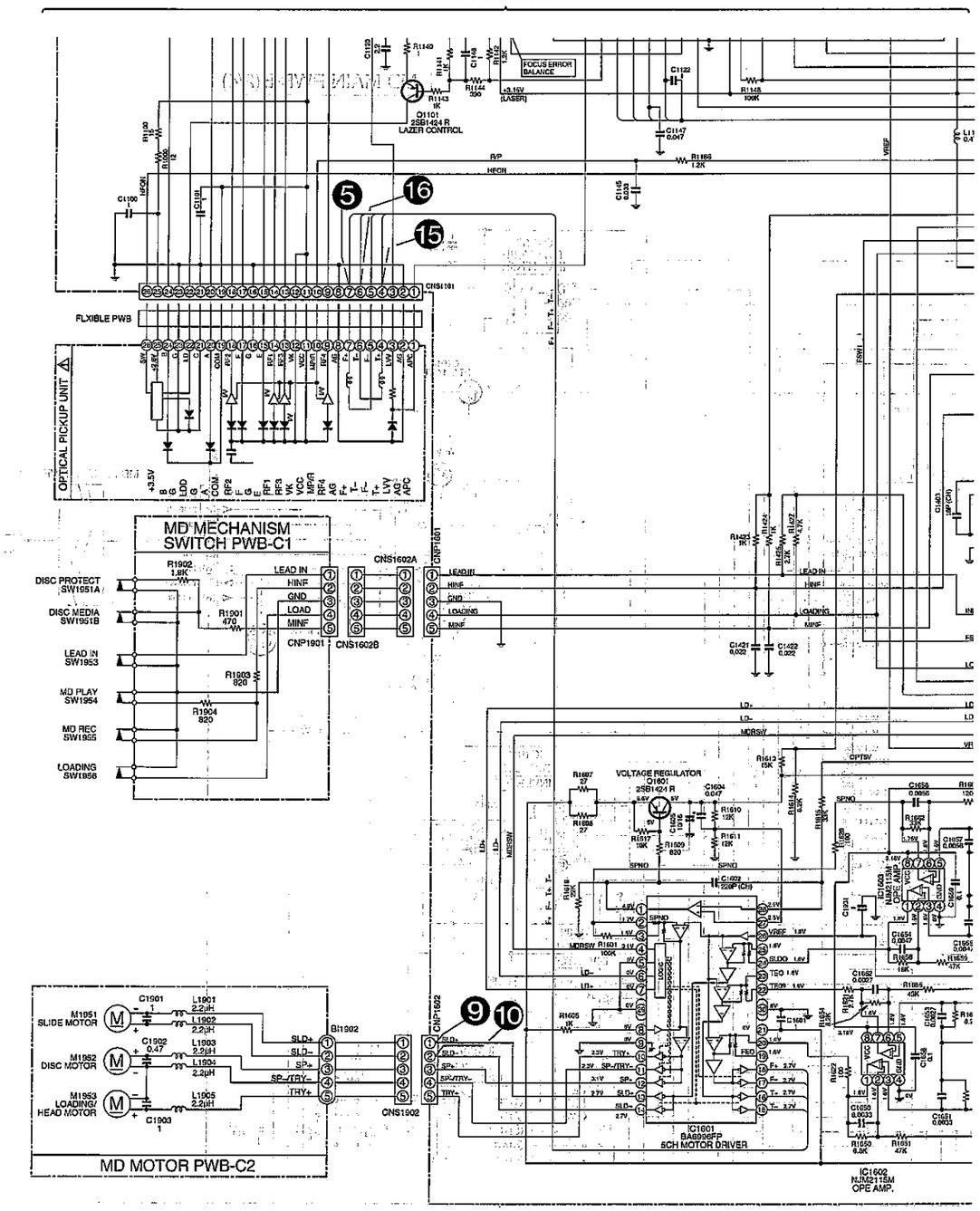


The numbers ❶ to ㉜ are waveform numbers shown in page 41, 42.

Figure 33 SCHEMATIC DIAGRAM (8/12)

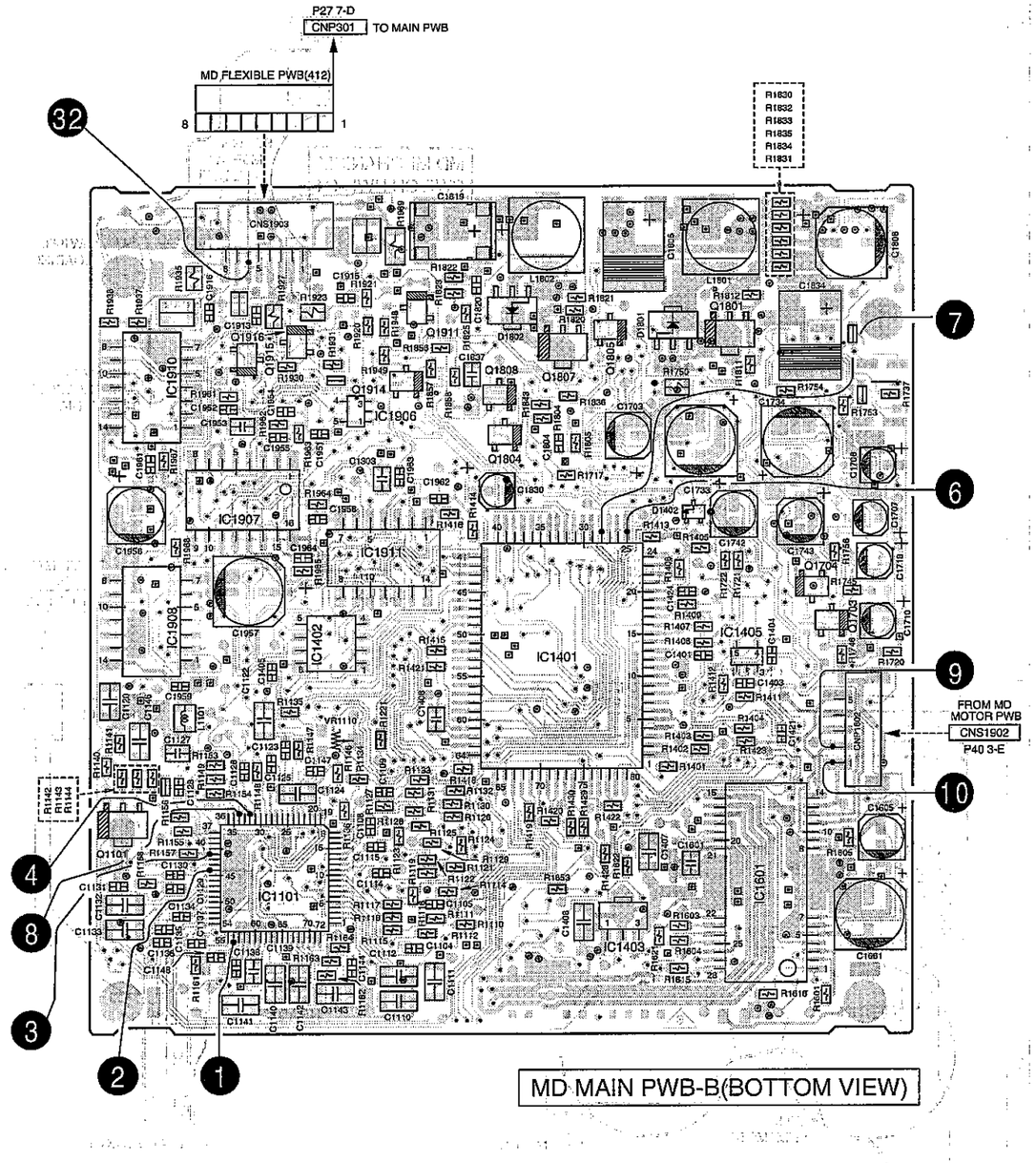
SITUATION :

TO 30 PAGE



NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

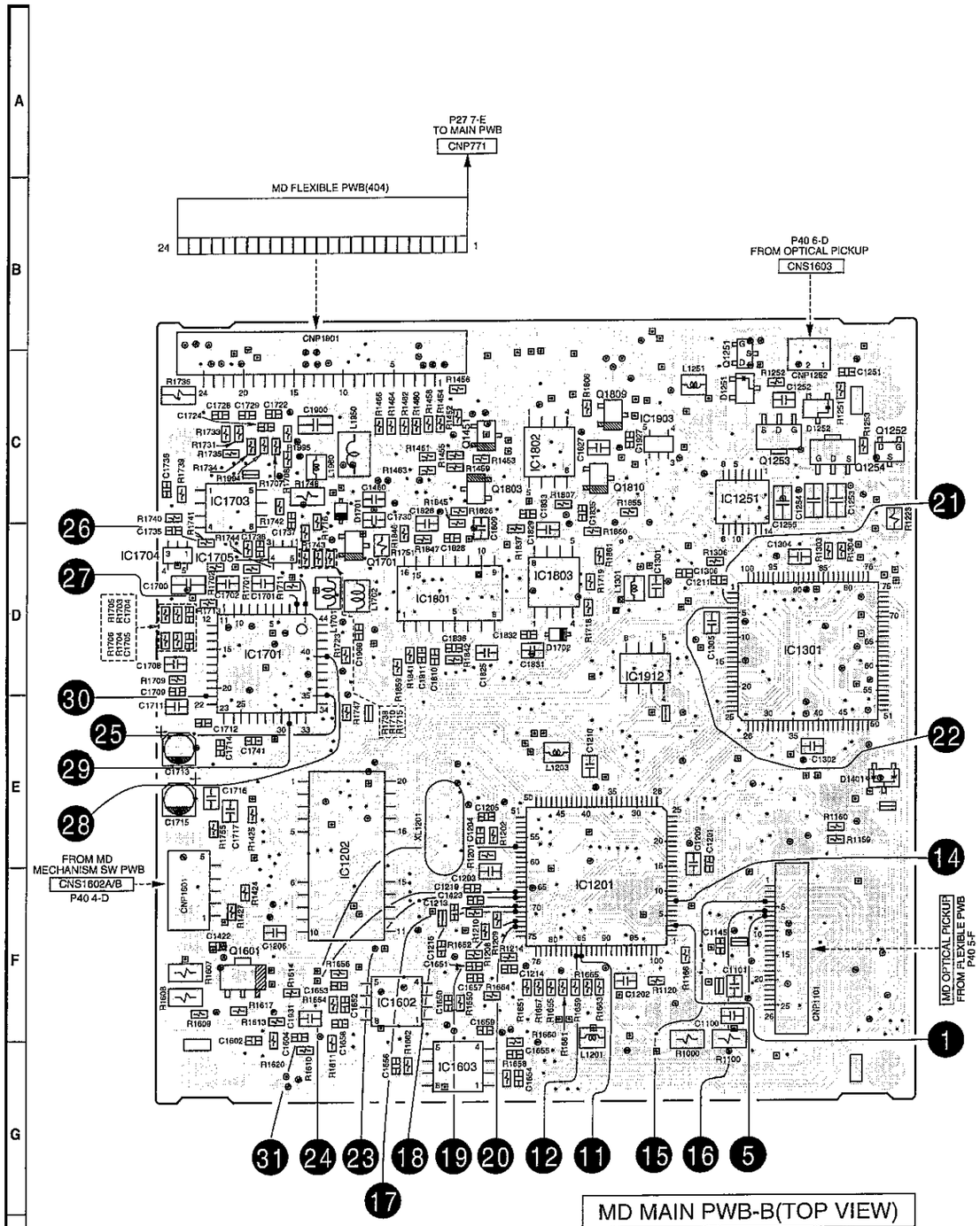
Figure 34 SCHEMATIC DIAGRAM (9/12)



◉ :Through-hole where the top, bottom and +B patterns are connected.
▣ :Through-hole where the top, bottom and ground patterns are connected.
● :Through-hole where the top and bottom patterns are connected.

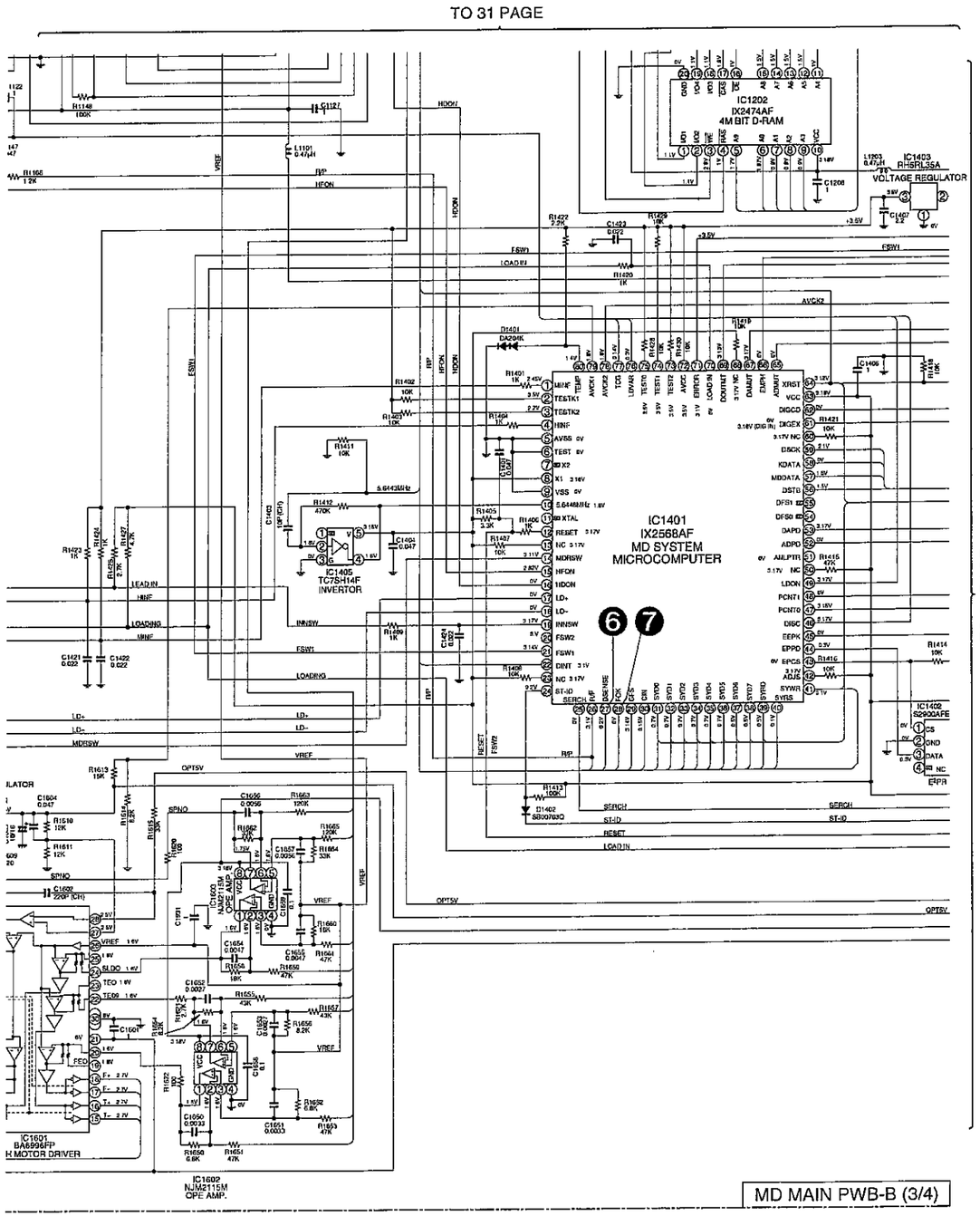
The numbers ❶ to ㉜ are waveform numbers shown in page 41, 42.

Figure 39 WIRIMG SIDE OF P.W.BOARD (4/5)



The numbers ❶ to ㉜ are waveform numbers shown in page 41, 42.

Figure 38 WIRIMG SIDE OF P.W.BOARD (3/5)

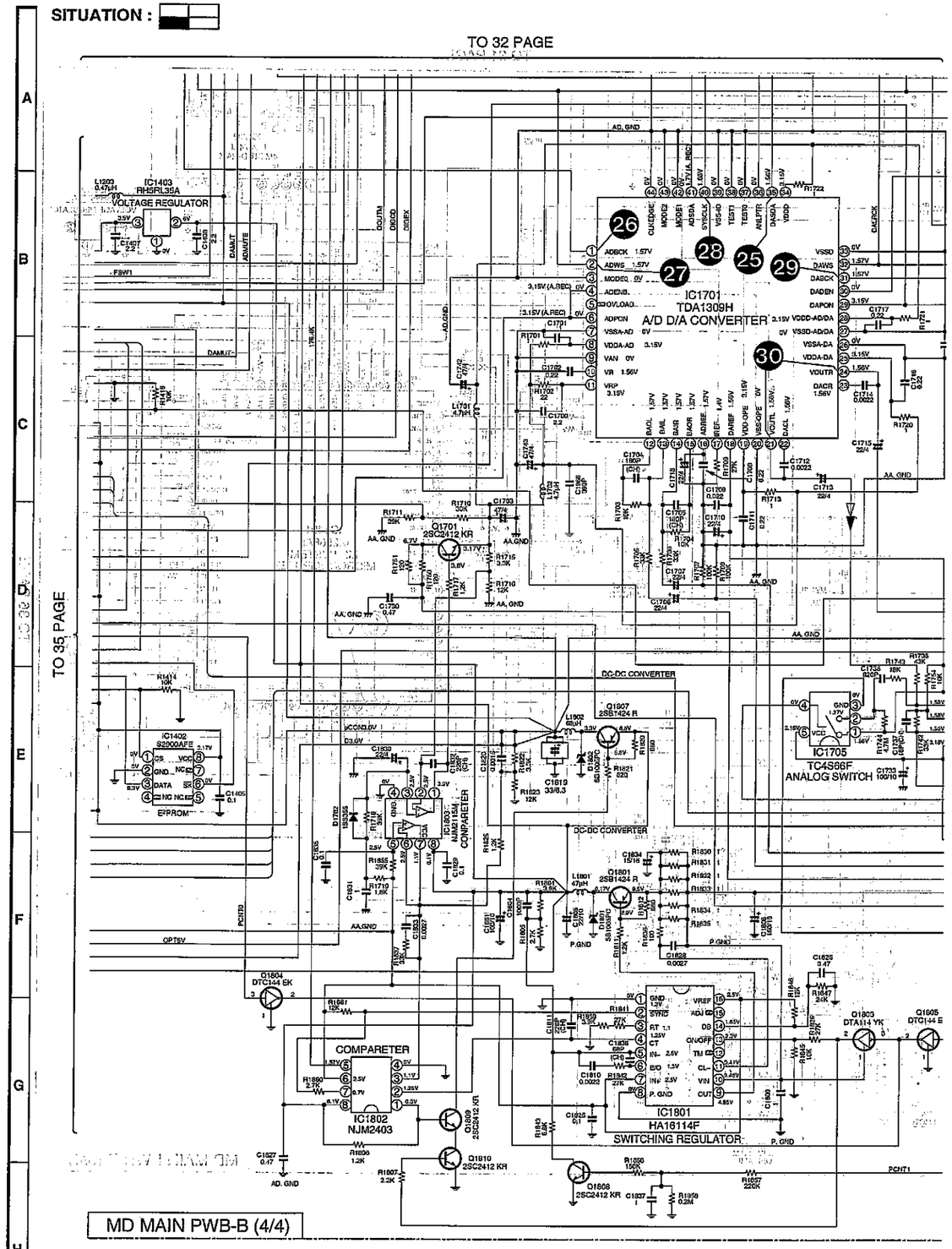


The numbers ❶ to ㉜ are waveform numbers shown in page 41, 42.

Figure 35 SCHEMATIC DIAGRAM (10/12)

MD-R1/X/E

SITUATION :



NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

The numbers ❶ to ㉜ are waveform numbers shown in page 41, 42.

Figure 36 SCHEMATIC DIAGRAM (11/12)

Figure 37 SCHEMATIC DIAGRAM (12/12)

IC1401 RH-iX2568AFZZ (IX2568AF):MD System Microcomputer (2/2)

Pin No.	Terminal Name	Input/Output	Function
52	ADPD	Output	A/D converter power on output
53	DAPD	Output	D/A converter power on output
54*	DFS0	Output	Not used
55*	DFS1	Output	Not used
56	DSTB	Output	MD strobe output
57	MDDATA	Output	MD data output
58	KDATA	Input	MD key data input
59	DSCK	Input	MD clock input
60	NC	–	Not connection internally
61	DIGEX	Output	Digital out control output
62	DIGCD	Output	Digital in selection input
63	VCC	–	Power terminal (2.8V)
64	XRST	Output	System reset output
65	ADMUT	Output	Muting signal output
66	EMPH	Output	Emphasis control output
67	DAMUT	Output	Audio muting ON/OFF output
68	NC	–	Not connection internally
69	DOUTMT	Output	Digital out control
70	LOAD IN	Input	MD LOAD SW detection input
71	ERROR	Input	PLL lock detection input
72	AVCC	–	Power terminal (3.5V)
73	TEST2	Input	Input for test
74	TEST1	Input	Input for test
75	TEST0	Input	Input for test
76	LDVAR	Output	Laser power control output
77	TCG	Input	TOTAL signal level detection input
78	AVCK2	Input	AD/DA converter 3.1V monitor input
79	AVCK1	Input	Power 5V monitor input
80	TEMP	Input	Temperature detection input

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

5. Jump Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Press the TOC Edit button twice.	JUMP menu	[JUMP 1]
Step 3	Press the Play button.	JUMP mode (pit section) (High reflection disc) JUMP mode (groove section) (Low reflection disc)	[s□□□□ ▲▲▲] [a□□□□ ▲▲▲]
Step 4	Press the Cue button. Press the Cue button. Press the Review button. Press the Review button.	Jump in Forward direction (pit section) (High reflection disc) Jump in Forward direction (groove section) (Low reflection disc) Jump in Review direction (pit section) (High reflection disc) Jump in Review direction (groove section) (Low reflection disc	[s□□□□ ▲▲▲] [a□□□□ ▲▲▲] [s□□□□ ▲▲▲] [a□□□□ ▲▲▲]
Step 5	Press the Stop button.	Test mode stop state	[TEST_X1●●]

- □□□□: Address, ▲▲▲: Number of jump lines
- When the TOC Edit button is pressed in the JUMP mode, the number of jump lines changes as follows.
  1line → 10line → 40line → 1line
- When the Stop button of the JUMP menu is pressed, the TEST mode is stopped.
- While the Cue/Review button is held down in the JUMP mode, jump is repeated at regular intervals of approx. 100 ms.

※ Cue/Review button → Operate the ◄◄/►► button.

6. TEST/PLAY Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state		[TEST_X1●●]
Step 2	Press the Timer button.	TEST/PLAY menu	[TEST PLAY]
Step 3	Press the Play button.	Address setting (target address value is displayed).	[ADRES0032]
Step 4	Press the Play button.	Continuous playback from address set value (pit section) (high reflection disc) Continuous playback from address set value (groove section) (low reflection disc)	[s□□□□c△△△△] [a□□□□c△△△△]
Step 5	Press the Stop button.	Return to TEST PLAY	[TEST_PLAY]

- □□□□: Address, △△△△: C1 Error
- When the Stop button of TEST/PLAY menu is pressed, the TEST mode is stopped.
- Address is set with the Cue/Review button.
  Cue : Address is set to +01H.
  Review: Address is set to -01H.
- When the Cue/Review button is held down, address changes continuously with 100 ms cycle.
- When the Cue/Review button is pressed, automatic carry is performed. The address must not exceed the upper limit and lower limit.
- When the Timer button is pressed during address setting, the initial value of address changes as follows.
  0032 → 03C0 → 0700 → 0032 → •••

7. TEST/REC Mode

Step No.	Setting Method	Remarks	Display
Step 1	Test mode STOP state	Load the low reflection disc. (Release the erase preventing knob in advance.)	[TEST_X1●●]
Step 2	Press the Timer button twice..	TEST/REC menu	[TEST REC]
Step 3	Press the Play button.	Address setting (target address value is displayed).	[a0032 PW▽▽]
Step 4	Press the Play button.	Continuous record	[a□□□□ PW▽▽]
Step 5	Press the Stop button.	Test mode STOP state.	[TEST REC]

- □□□□: Address, ▽▽: Setting
- When the Stop button of TEST/REC menu is pressed, the TEST mode is stopped.
- Address is set with the Cue/Review button.
  Cue : Address is set to +01H.
  Review: Address is set to -01H.
- When the Cue/Review button is held down, address changes continuously with 100 ms cycle.
- When the Cue/Review button is pressed, automatic carry is performed. The address must not exceed the upper limit and lower limit.
- When the Display button is pressed during address setting, the initial value of address changes as follows.
  Start address
  0032 → Disc inner periphery 03C0→ Disc center 0700→ The outer periphery of disc is set.
- When the Jog dial is turned in the address set state and continuous record state, the record power of laser changes.
  [REC—POWER ▽▽]

● Lead-in switch position measurement mode (Test Disc 1 is used)

Measurement with high reflection disc (check when the mechanism switch was replaced)

Step No.	Setting Method	Remarks	Display	
			Disc for record	Disc for playback
Step 1	Test mode start	Servo OFF (Power ON)	AUTO	AUTO
Step 2	Once press the TOC Edit button.		Operation is disabled if disc for record is in serted.	INNER
Step 3	Once press the Play/ Pause button.	The sub-code cluster value of Read-in switch position is displayed.		[s□□.□ a△△.△]

Note : Adjust the lead-in switch position at SUBQ FF85 to FFD2.

1. Loosen the three screws (A) fixing the mechanism switch PWB.
2. Pressing the mechanism switch PWB in the arrow direction, retighten the screw. Then, measure again the position of lead-in switch.
   After position adjustment fix the mechanism switch PWB with the three screws (A). (See Figure 16.)

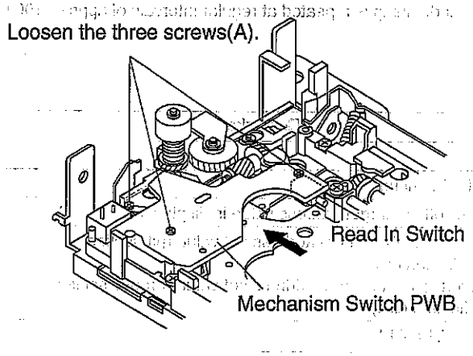


Figure 16

● Forced rotation of loading motor

While the display indication is in AUTO and EJECT state, the loading motor can be forcibly rotated by turning the Jog dial.

IC1401 RH-iX2568AFZZ (IX2568AF):MD System Microcomputer (1/2)

Pin No.	Terminal Name	Input/Output	Function
1	MINF	Input	Disc classification detect input
2	TESTK1	Input	Test key input 1
3	TESTK2	Input	Test key input 2
4	HINF	Input	Mechanism/Head location input
5	AVSS	–	Ground terminal
6	TEST	Input	Input for test, usually connected ground
7*	X2	Output	Not used
8	X1	Input	Connected to power supply 2.8V
9	VSS	–	Ground terminal
10	5.6448MHz	Input	5.6448MHz input
11*	XTAL	Output	Not used
12	RESET	Input	Reset input
13	NC	—	Not connection internally
14	MDRSW	Output	MDRSW output
15	HFON	Output	High frequency super position ON/OFF control output
16	HDON	Output	Magnetic head current ON/OFF control output
17	LD+	Output	Loading motor + control output
18	LD-	Output	Loading motor – control output
19	INNSW	Input	Inner switch detection input
20*	FSW2	Output	Not used
21	FSW1	Output	Switch power frequency selection
22	DINT	Input/Output	LSI interruption request signal
23	NC	–	Not connection internally
24	ST-ID	Input	Synchro record start input
25	SERCH	Input	Synchro record interrupt input
26	R/$\overline{P}$	Output	Record /Play select output
27	DSENSE	Input	Encoder/Decoder LSI servo status detection signal
28	FOK	Input	Focus OK detection signal input
29	GFS	Input	Frame sync lock status input
30	CIN	Input	Track count signal input
31	SYD0	Input/Output	Encoder/Decoder LSI data bus terminal
32	SYD1	Input/Output	Encoder/Decoder LSI data bus terminal
33	SYD2	Input/Output	Encoder/Decoder LSI data bus terminal
34	SYD3	Input/Output	Encoder/Decoder LSI data bus terminal
35	SYD4	Input/Output	Encoder/Decoder LSI data bus terminal
36	SYD5	Input/Output	Encoder/Decoder LSI data bus terminal
37	SYD6	Input/Output	Encoder/Decoder LSI data bus terminal
38	SYD7	Input/Output	Encoder/Decoder LSI data bus terminal
39	SYRD	Output	Encoder/Decoder LSI register read pulse output
40	SYRS	Output	Encoder/Decoder LSI register selection output
41	SYWR	Output	Encoder/Decoder LSI register write pulse output
42	ADJS	Output	Output for check
43	EPCS	Output	E^2PROM chip selection output
44	EPPD	Input/Output	E^2PROM serial data input/output
45	EEPK	Output	E^2PROM sirial clock output
46	DISC	Output	Disc classification detect output
47	PCNT0	Output	Power control output
48	PCNT1	Output	Power control output
49	LDON	Output	Laser ON/OFF control signal output
50	NC	–	Not connection internally
51*	ANLPTR	Output	Not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1301 VHiLR376411-1 (LR376411):ATRAC Companding (2/2)

Pin No.	Terminal Name	Input/Output	Function
51*	MCO27	Output	Microcomputer extension output port 2
52*	MCO26	Output	
53*	MCO25	Output	
54*	MCO24	Output	
55*	MCO23	Output	
56*	MCO22	Output	
57*	MCO21	Output	
58*	MCO20	Output	
59	MCI07	Input	Microcomputer extension input port
60	MCI06	Input	
61	MCI05	Input	
62	VCC	—	Power supply Power terminal
63	GND	—	Ground Ground terminal
64	MCI04	Input/Output	Microcomputer extension input port
65	MCI03	Input/Output	(input/output in test mode)
66	MCI02	Input/Output	
67	MCI01	Input/Output	
68	MCI00	Input/Output	
69	X44K	Input/Output	(Input/output in test mode)
70*	SDTO	Input/Output	
71	SDTI	Input/Output	
72	ADMUTE	Input/Output	
73	DMUTE	Input/Output	
74	GADDAT	Input/Output	
75	GDADAT	Input	
76	G74R	Input	General-use gate D-flip-flop
77	G74CK	Input	(input in test mode)
78	G74D	Input	
79	G74Q	Input/Output	
80*	G74QX	Input/Output	
81*	INVO	Input/Output	INV output — General-use gate
82	ANDO	Input/Output	AND output — * INV output Inverse output of signal connected to INV input
83*	ORO	Input/Output	OR output — * AND output AND output of signal connected to AND1 input 1 and AND input 2
84	ORI1	Input	OR input 1 — * OR output OR output of signal connected to OR input 1 and OR input 2
85	ORI2	Input	OR input 2 — (Input in test mode)
86	ANDI1	Input	AND input 1
87	VCC	—	Power supply Power terminal
88	GND	—	Ground Ground terminal
89	ANDI2	Input	AND input 2 — General-use gate
90	INVI	Input	INV input — * EXOR output Exclusive OR output of signal connected to EXOR input A and EXOR input B
91	EORA	Input	EXOR input A — * NAND output NAND inverse output of signal connected to NAND input A and NAND input B
92	EORB	Input	EXOR input B — (Input/output in test mode)
93*	EORO	Input/Output	EXOR output
94	NA1A	Input	NAND1 input A
95	NA1B	Input	NAND1 input B
96*	NA1O	Input/Output	NAND1 output
97	NA2A	Input/Output	NAND2 input A
98	NA2B	Input/Output	NAND2 input B
99	NA2O	Input/Output	NAND2 output
100*	–	–	Terminal not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

● Adjustment of magnetic head mounting position

- When the magnetic head and optical pickup have been replaced, be sure to adjust the mounting position.
- For easier adjustment of mounting position move the optical pickup to the center position, and then adjust the position.

1. Set the adjusting transparent disc 3.
2. Lower the magnetic head up-shift arm with your finger, and raise the magnetic head.
3. Viewing the set from above, make an adjustment so that the magnetic head aligns with the optical pickup objective lens.
   - •Radial direction: Slightly loosen the head fixing screw (A), and shift the magnetic head fitting to align the head with the pickup abjective lens.
   - •Circumferential direction: Turn the magnetic head circumferential adjustment nut (B), and adjust to align the head with the objective lens.
4. Make sure that there is a clearance as shown in Figure 17-1 and the magnetic head moves up and down smoothly.
5. After adjustment apply Screw Lock to the head fixing screw (A) and adjusted magnetic head circumferential adjusting screw (B).

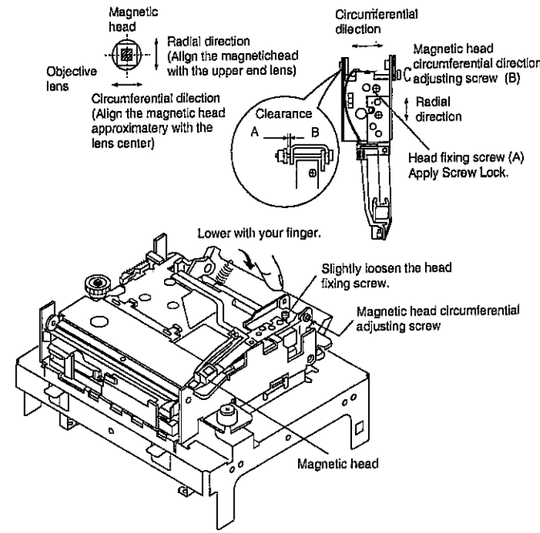

Magnetic head
Radial direction (Align the magnetichead with the upper end lens)
Objective lens
Circumferential dilection (Align the magnetic head approximatery with the lens center)
Circumferential dilection
Magnetic head circumferential direction adjusting screw (B)
Clearance
A
B
Radial direction
Head fixing screw (A) Apply Screw Lock.
Lower with your finger.
Slightly loosen the head fixing screw.
Magnetic head circumferential adjusting screw
Magnetic head

Figure 17-1

● Mechanism Adjustment

1. Optical pickup grating inspecting method

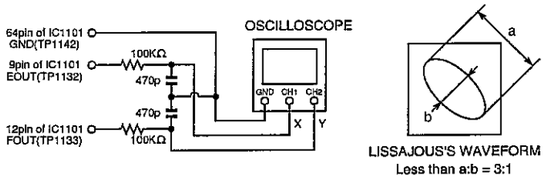


Figure 17-2 OPTICAL PICKUP GRATING DEVIATION MEASURING METHOD

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high refection MD disc ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spin motor, and make an adjustment, observing the Lissajous's wavefor.
2. After adjustment tighten the screws in arder of<1> , <2> ,< 3> .

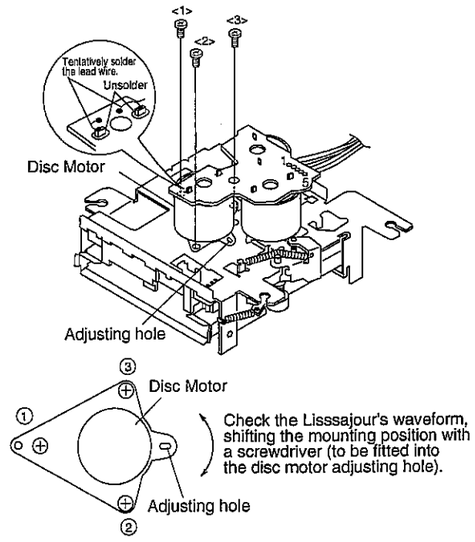


Figure 17-3

Error display	Errors	Corrective action
UTOC W ERROR	• An error occurred during UTOC rewriting, so that UTOC could not be rewritten corrctly.	• The disc has flaw. Replace the disc.
FOCUS ERROR	• When the disc was loading, the focus could not be set.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.
BLANK MD	• When UTOC was read, it was found that total TNO and the number of characters of NAME was 0.	• Check whether the disc is recordable one by preforming recording.
DEFECT	• Focus retract error occurred due to shock during REC-PLAY.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.

EXPLANATION OF MECHANISM ERROR

Error display	Errors
MECHA_ERR1_* MECHA_ERR2_* MECHA_ERR3_*	Ejection is not completed. Head-up is not completed. Head-down position 1.3 to 1.853V

HINF (IC1401 ④ PIN)

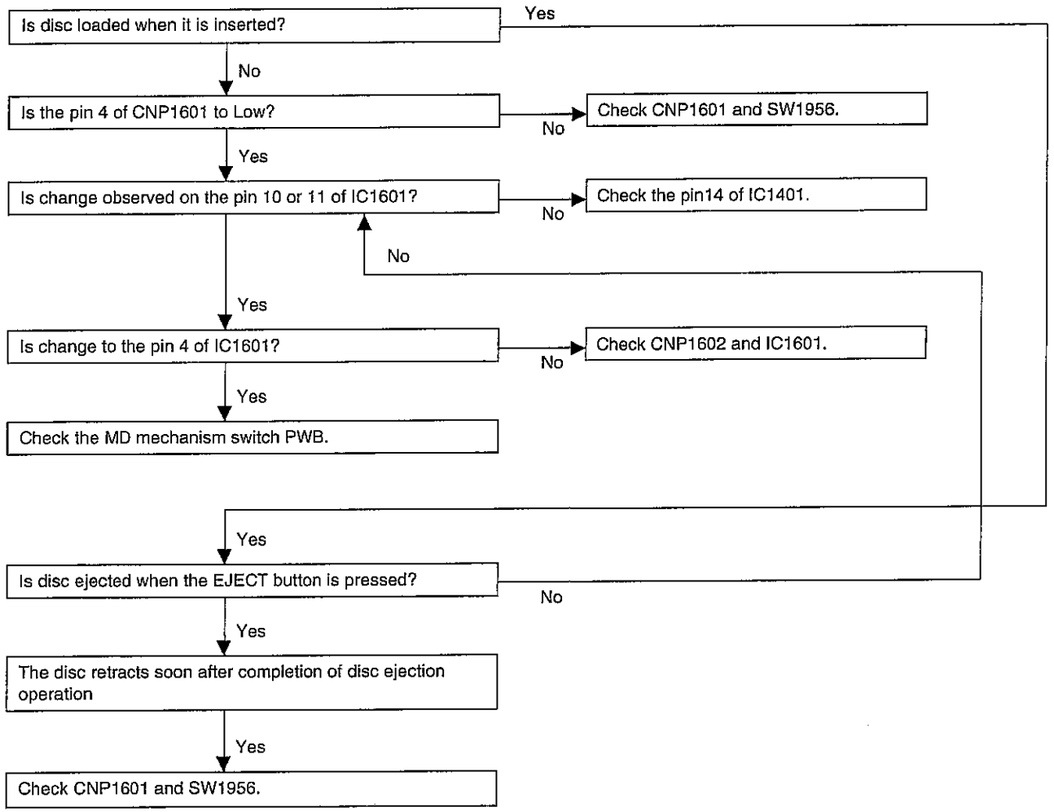
* = E	Ejection completed position	< 1.3 V
* = M	Horizontal midway position	> 3.06 V
* = L	Load completed position	1.853 – 2.48 V
* = D	Head-down position	1.3 – 1.853 V

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (2/2)

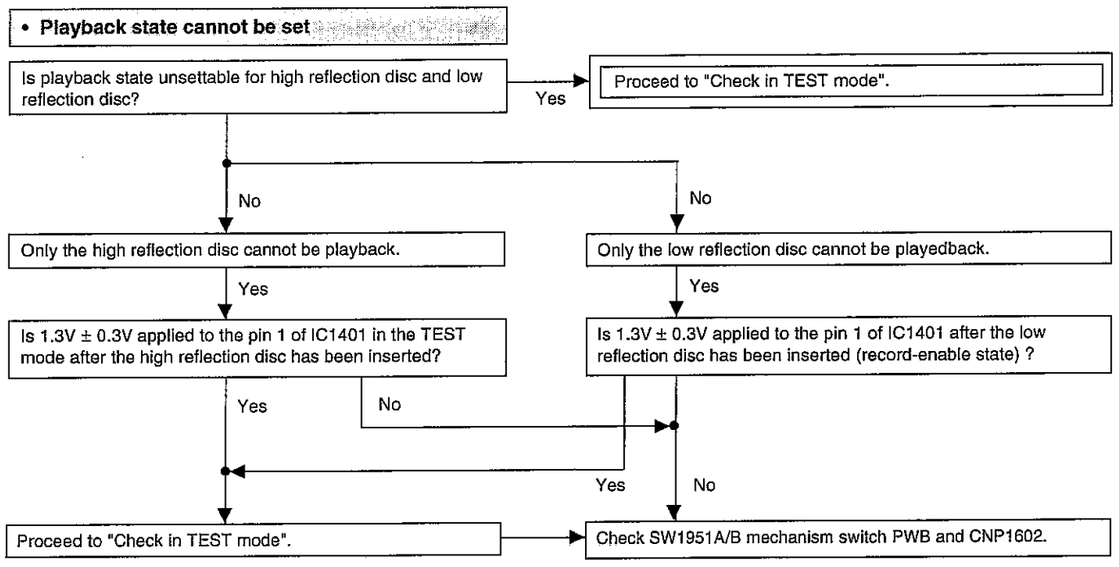
Pin No.	Terminal Name	Input/Output	Function
51	RAA8	Output	Address output ADR8 to external D-RAM
52	RAA9	Output	Address output ADR9 to external D-RAM
53	TEST0	Input	Input for test Usually connect to GND to use.
54	TEST1	Input	Input for test Usually connect to GND to use.
55*	C2PO	Output	Flag monitor output after C2 error correction
56*	ACRCER	Output	CRC error flag monitor output of ADIP
57	DIN	Input	Digital input signal
58	DOOUT	Output	Digital output signal
59	X1I	Input	Oscillation circuit input 33.8688MHz
60	X1O	Output	Oscillation circuit output 33.8688MHz
61	BCLK	Output	Music data shift clock
62	VDD1	—	Digital power terminal
63	DGND	—	Digital ground terminal
64	LRCK	Output	Music data L-ch/R-ch selection output
65	DFCK	Output	Clock 256 Fs for AD/DA converter digital filter
66	ADDATA	Input	Audio data input
67	DADATA	Output	Audio data output
68	X16MO	Output	Clock 16.9344MHz
69	SGLAT	Output	Compressed data latch clock
70	SGDAT	Input/Output	Compressed data input in record mode Compressed data output in playback mode
71	SGFLG	Output	Compressed data error flag output in playback mode
72	SGRQT	Input	Compressed data request signal
73	SGSHIFT	Output	Compressed data bit clock
74	DADDATA	Input/Output	Music data output in record mode Music data input in playback mode
75	ATBCLK	Output	Music data shift clock
76	ATLRCK	Output	Music data L-ch/R-ch selection output
77	X176KO	Output	Clock output f=175.4kHz (4 fs)
78	FODRF	Output	Focus servo forward output PWM
79	FODRR	Output	Focus servo reverse output PWM
80	TRDRF	Output	Tracking servo forward output PWM
81	TRDRR	Output	Tracking servo reverse output PWM
82	SLDRF	Output	Slide servo forward output PWM
83	SLDRR	Output	Slide servo reverse output PWM
84	SPDRF	Output	Slide servo forward output or spindle servo output PWM
85	SPDRP	Output	Slide servo reverse output or spindle rotation forward/reverse selection
86	EFMO	Output	EFM signal output in record mode. CIF (CI error flag) monitor output in playback mode.
87	VDD1	—	Digital power terminal
88	DGND	—	Digital ground terminal
89	AGAIN	Analog Output	A amp. gain adjustment output of RF LSI
90	AGAINS	Analog Output	A amp. gain selection output of RF LSI (High refrection <-> Low refrection)
91	BGAIN	Analog Output	B amp. gain adjustment output of RF LSI
92	BGAINS	Analog Output	B amp. gain selection output of RF LSI (High refrection <-> Low refrection)
93	EGAIN	Analog Output	E amp. gain adjustment output of RF LSI
94	EGAINS	Analog Output	E amp. gain selection output of RF LSI (High refrection <-> Low refrection)
95	FGAIN	Analog Output	F amp. gain adjustment output of RF LSI
96	FGAINS	Analog Output	F amp. gain selection output of RF LSI (High refrection <-> Low refrection)
97*	FBAL	Analog Output	Balance adjustment for focus error
98	TBAL	Analog Output	Balance adjustment for tracking error
99	TCGAIN	Analog Output	Gain adjustment output of tracking cross detecting amp.
100	VREF	Analog Output	Reference Voltage of RF LSI

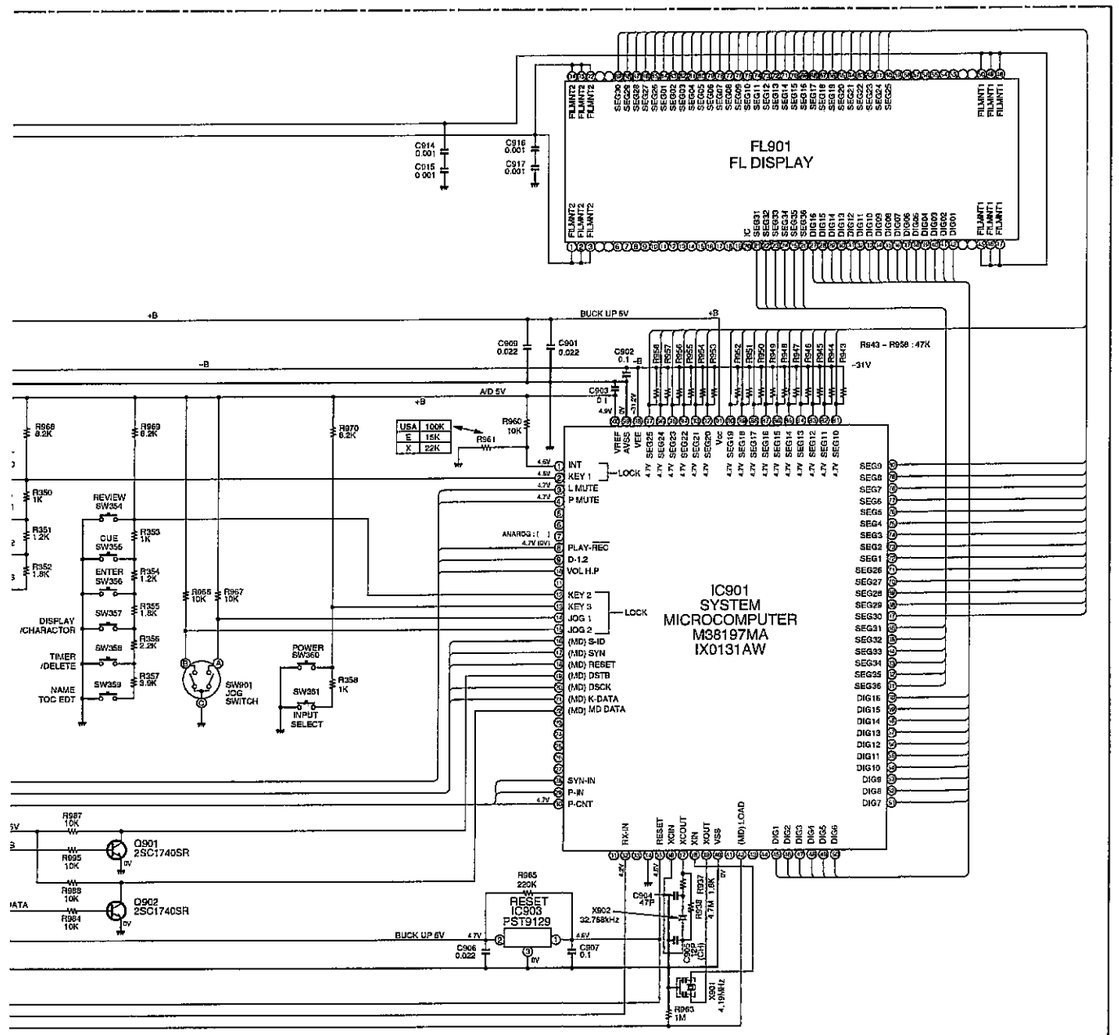
In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

• Disc loading is not normal



• Playback state cannot be set

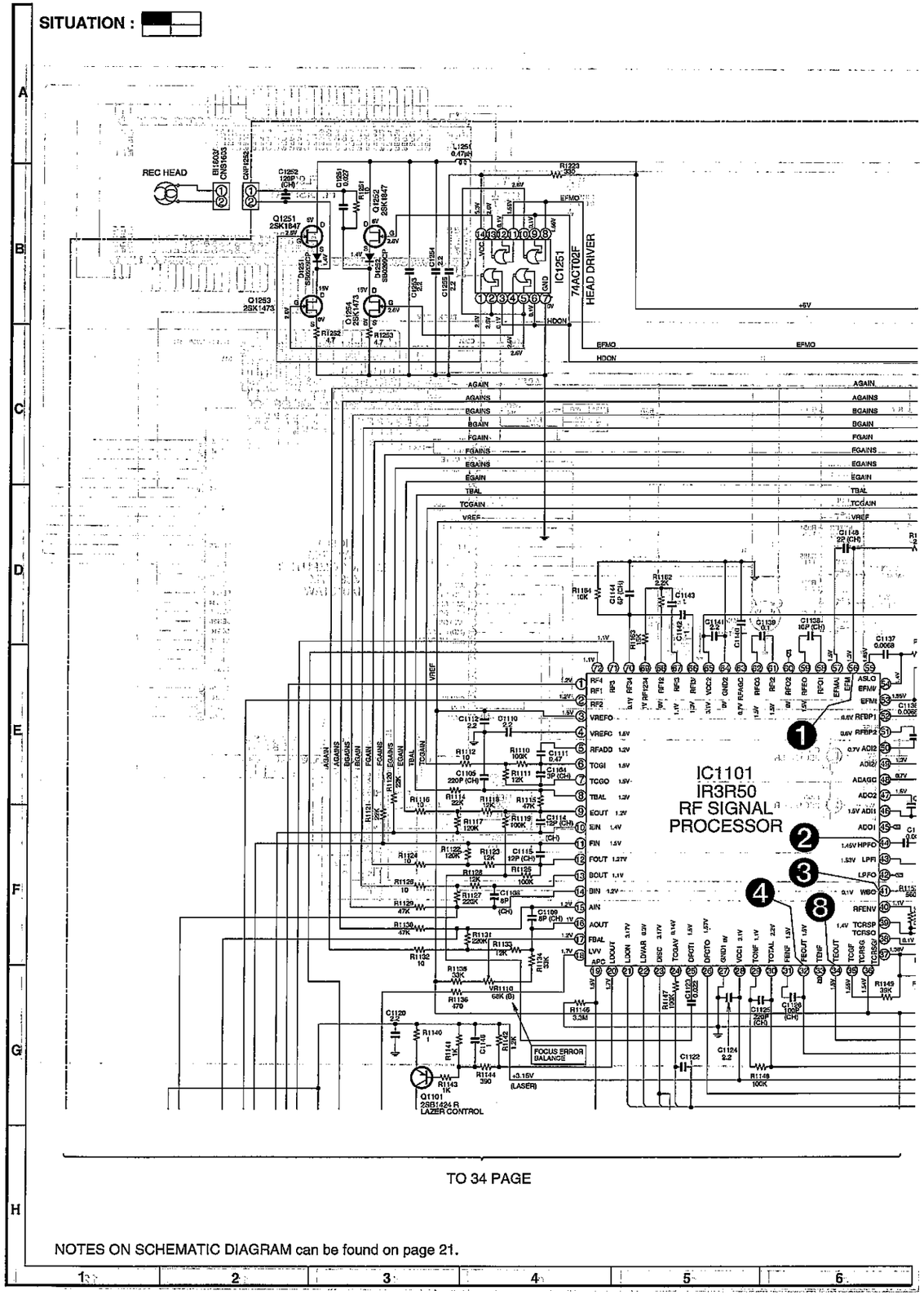

Is playback state unsettable for high reflection disc and low reflection disc?
Yes
Proceed to "Check in TEST mode".
No
No
Only the high reflection disc cannot be playback.
Only the low reflection disc cannot be playedback.
Yes
Yes
Is 1.3V ± 0.3V applied to the pin 1 of IC1401 in the TEST mode after the high reflection disc has been inserted?
Is 1.3V ± 0.3V applied to the pin 1 of IC1401 after the low reflection disc has been inserted (record-enable state) ?
Yes
No
Yes
No
Proceed to "Check in TEST mode".
Check SW1951A/B mechanism switch PWB and CNP1602.



7	8	9	10	11	12

Figure 29 SCHEMATIC DIAGRAM (4/12)

SITUATION :



NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

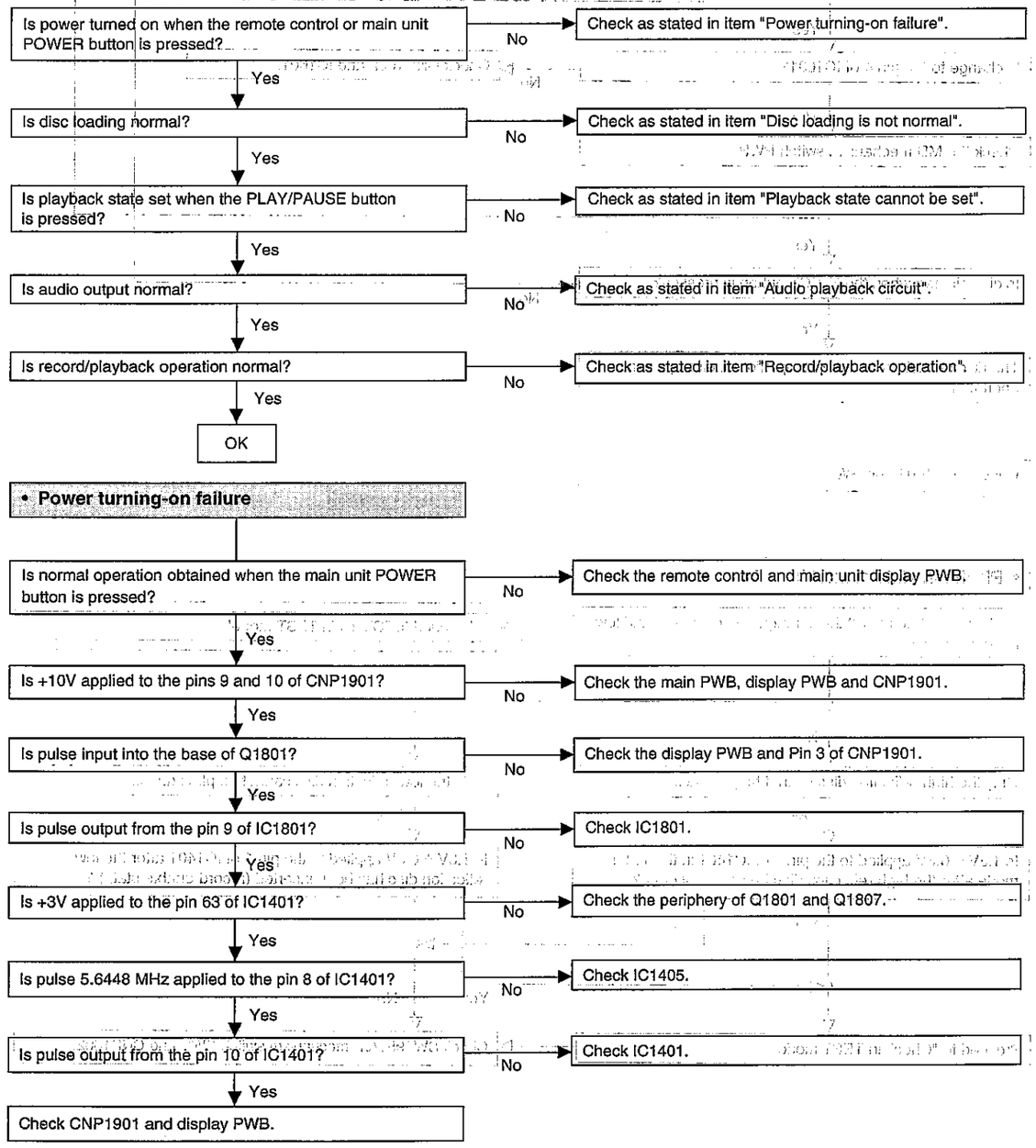
Figure 30 SCHEMATIC DIAGRAM (5/12)

TROUBLESHOOTING

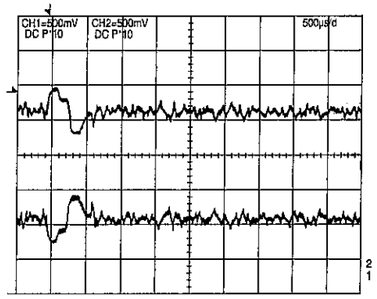
When does not function

When the CD section does not operate When the objective lens of the optical pickup is dirty,this section may not operate.Clean the objective lens,and check the playback operation.When this section does not operate even after the above step is taken,check the following items.
Remove the cabinet and follow the troubleshooting instructions.
"Track skipping and/or no TOC(Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.
Do not touch the lens with the bare hand.


Is power turned on when the remote control or main unit POWER button is pressed?
No
Check as stated in item "Power turning-on failure".
Yes
Is disc loading normal?
No
Check as stated in item "Disc loading is not normal".
Yes
Is playback state set when the PLAY/PAUSE button is pressed?
No
Check as stated in item "Playback state cannot be set".
Yes
Is audio output normal?
No
Check as stated in item "Audio playback circuit".
Yes
Is record/playback operation normal?
No
Check as stated in item "Record/playback operation".
Yes
OK
• Power turning-on failure
Is normal operation obtained when the main unit POWER button is pressed?
No
Check the remote control and main unit display PWB.
Yes
Is +10V applied to the pins 9 and 10 of CNP1901?
No
Check the main PWB, display PWB and CNP1901.
Yes
Is pulse input into the base of Q1801?
No
Check the display PWB and Pin 3 of CNP1901.
Yes
Is pulse output from the pin 9 of IC1801?
No
Check IC1801.
Yes
Is +3V applied to the pin 63 of IC1401?
No
Check the periphery of Q1801 and Q1807.
Yes
Is pulse 5.6448 MHz applied to the pin 8 of IC1401?
No
Check IC1405.
Yes
Is pulse output from the pin 10 of IC1401?
No
Check IC1401.
Yes
Check CNP1901 and display PWB.

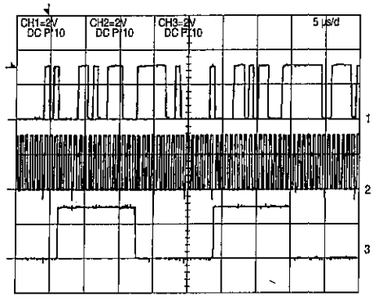
Groove (PLAY MODE)



15 TP1104 (T+)

16 TP1106 (T–)

DA/DA Convertor Input (PLAY MODE)

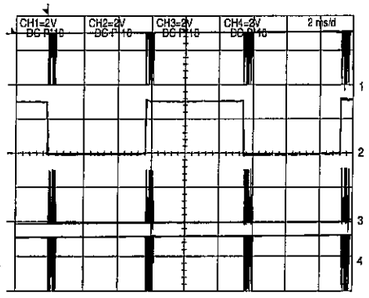


25 DASDA

26 ADBCK

27 ADWS

ENDEC ATRAC DATA TRANSMISSION (PLAY MODE)



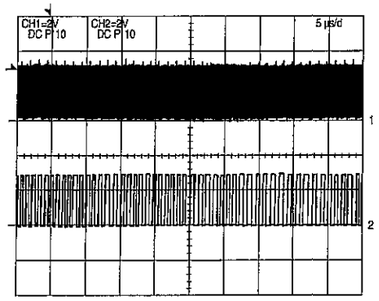
17 SGLAT

18 SGDAT

19 SGRQT

20 SGSHIFT

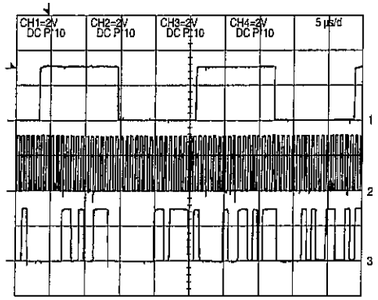
DA/AD Convertor Input (PLAY MODE)



28 SYSCLK

29 DABCK

D/A CONVERTOR (PLAY MODE)

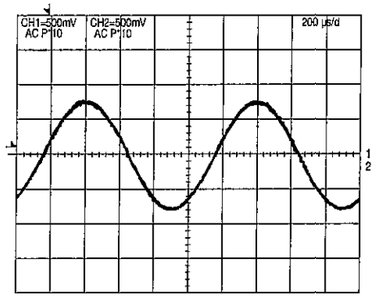


21 LRCK

22 DSHIFT

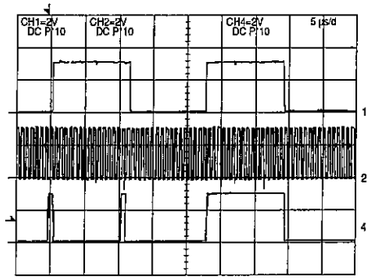
23 DADATA

TEST DISC (1KHz 0dB) PLAY MODE



30 VOUTL VOUTR

A/D CONVERTOR ANALOG REC MODE (AUX input is no signal)

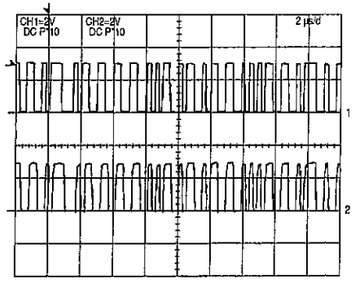


21 LRCK

22 DSHIFT

24 ADDATA

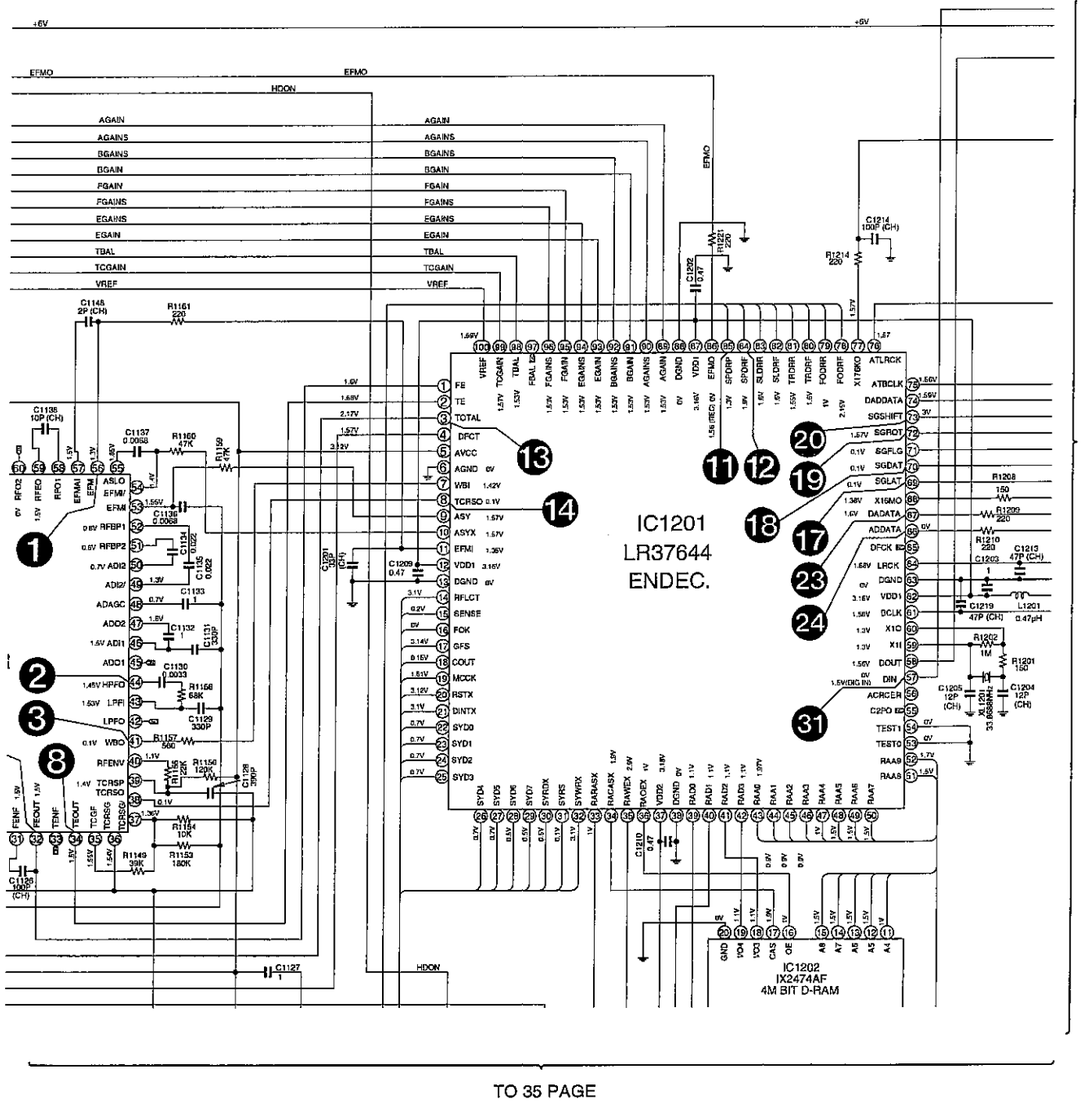
DIGITAL IN/OUT
OPTICAL DIGITAL 1KHz 0dB INPUT
AUX DIGITAL INPUT MD REC PAUSE MODE



31 DIN

32 TP1504 (DIGO)

MD MAIN PWB-B (1/4)

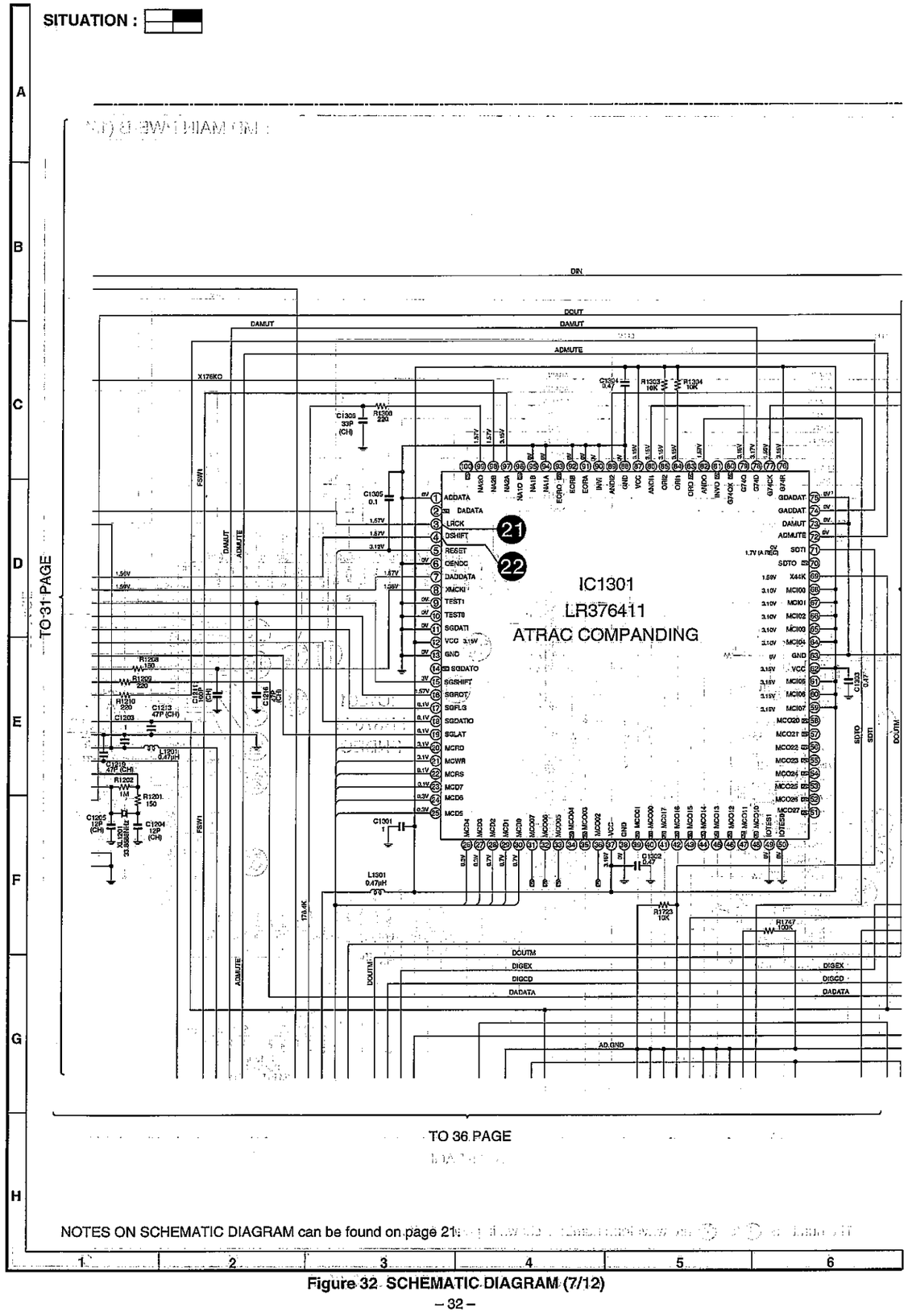


The numbers 1 to 32 are waveform numbers shown in page 41, 42.

7	8	9	10	11	12

Figure 31 SCHEMATIC DIAGRAM (6/12)

SITUATION :

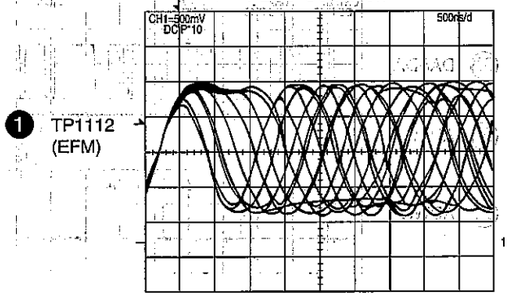


NOTES ON SCHEMATIC DIAGRAM can be found on page 21.

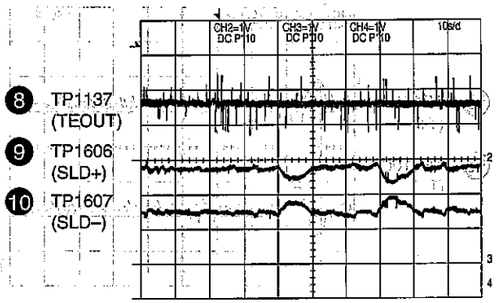
Figure 32 SCHEMATIC DIAGRAM (7/12)

WAVEFORMS OF MD CIRCUIT

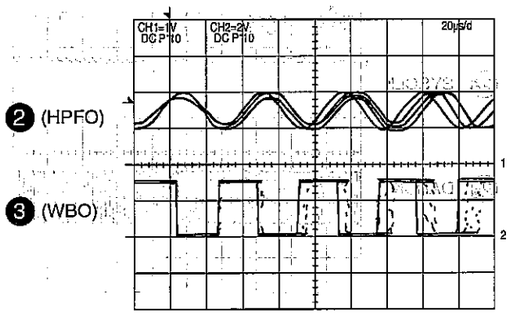
PLAY Condition



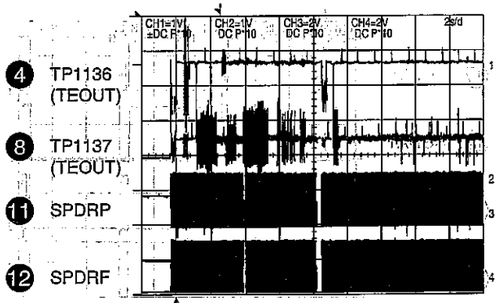
Groove (PLAY MODE)



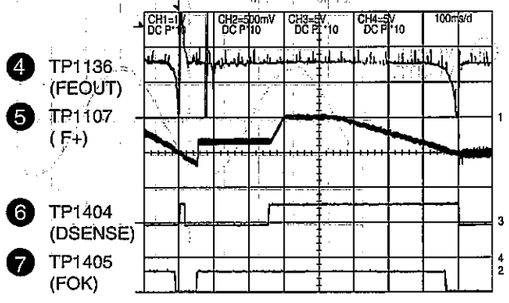
PLAY Condition(NO Disc)



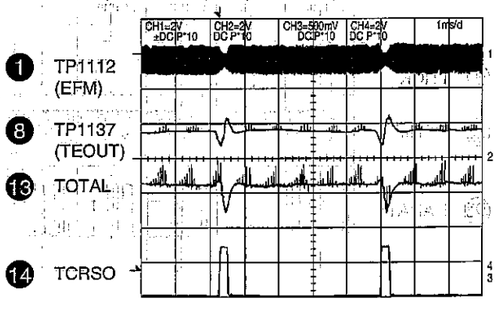
POWER OFF → STAND-BY → PLAY



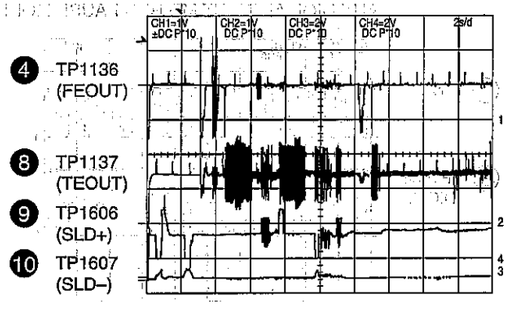
STAND-BY → PLAY



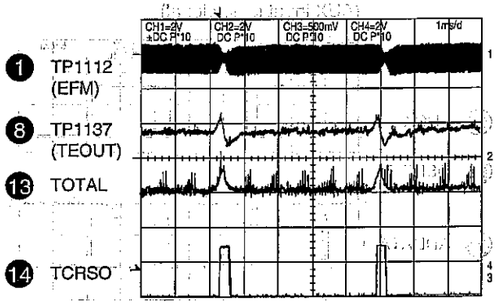
PIT (PLAY MODE)



POWER OFF → STAND-BY



Groove (PLAY MODE)



IC1301 VHiLR376411-1 (LR376411):ATRAC Companding (2/2)

Pin No.	Terminal Name	Input/Output	Function
51*	MCO27	Output	Microcomputer extension output port 2
52*	MCO26	Output	
53*	MCO25	Output	
54*	MCO24	Output	
55*	MCO23	Output	
56*	MCO22	Output	
57*	MCO21	Output	
58*	MCO20	Output	
59	MCI07	Input	Microcomputer extension input port
60	MCI06	Input	
61	MCI05	Input	
62	VCC	—	Power supply — Power terminal
63	GND	—	Ground — Ground terminal
64	MCI04	Input/Output	Microcomputer extension input port (input/output in test mode)
65	MCI03	Input/Output	
66	MCI02	Input/Output	
67	MCI01	Input/Output	
68	MCI00	Input/Output	
69	X44K	Input/Output	(Input/output in test mode)
70*	SDTO	Input/Output	
71	SDTI	Input/Output	
72	ADMUTE	Input/Output	
73	DMUTE	Input/Output	
74	GADDAT	Input/Output	
75	GDADAT	Input	
76	G74R	Input	General-use gate D-flip-flop (input in test mode)
77	G74CK	Input	
78	G74D	Input	
79	G74Q	Input/Output	
80*	G74QX	Input/Output	
81*	INVO	Input/Output	INV output — General-use gate: * INV output Inverse output of signal connected to INV input; * AND output AND output of signal connected to AND1 input 1 and AND input 2; * OR output OR output of signal connected to OR input 1 and OR input 2 (Input in test mode)
82	ANDO	Input/Output	AND output
83*	ORO	Input/Output	OR output
84	ORI1	Input	OR input 1
85	ORI2	Input	OR input 2
86	ANDI1	Input	AND input 1
87	VCC	—	Power supply — Power terminal
88	GND	—	Ground — Ground terminal
89	ANDI2	Input	AND input 2 — General-use gate: * EXOR output Exclusive OR output of signal connected to EXOR input A and EXOR input B; * NAND output NAND inverse output of signal connected to NAND input A and NAND input B (Input/output in test mode)
90	INVI	Input	INV input
91	EORA	Input	EXOR input A
92	EORB	Input	EXOR input B
93*	EORO	Input/Output	EXOR output
94	NA1A	Input	NAND1 input A
95	NA1B	Input	NAND1 input B
96*	NA1O	Input/Output	NAND1 output
97	NA2A	Input/Output	NAND2 input A
98	NA2B	Input/Output	NAND2 input B
99	NA2O	Input/Output	NAND2 output
100*	–	–	Terminal not used

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

● Adjustment of magnetic head mounting position

- When the magnetic head and optical pickup have been replaced, be sure to adjust the mounting position.
- For easier adjustment of mounting position move the optical pickup to the center position, and then adjust the position.

1. Set the adjusting transparent disc 3.
2. Lower the magnetic head up-shift arm with your finger, and raise the magnetic head.
3. Viewing the set from above, make an adjustment so that the magnetic head aligns with the optical pickup objective lens.
   - •Radial direction: Slightly loosen the head fixing screw (A), and shift the magnetic head fitting to align the head with the pickup abjective lens.
   - •Circumferential direction: Turn the magnetic head circumferential adjustment nut (B), and adjust to align the head with the objective lens.
4. Make sure that there is a clearance as shown in Figure 17-1 and the magnetic head moves up and down smoothly.
5. After adjustment apply Screw Lock to the head fixing screw (A) and adjusted magnetic head circumferential adjusting screw (B).

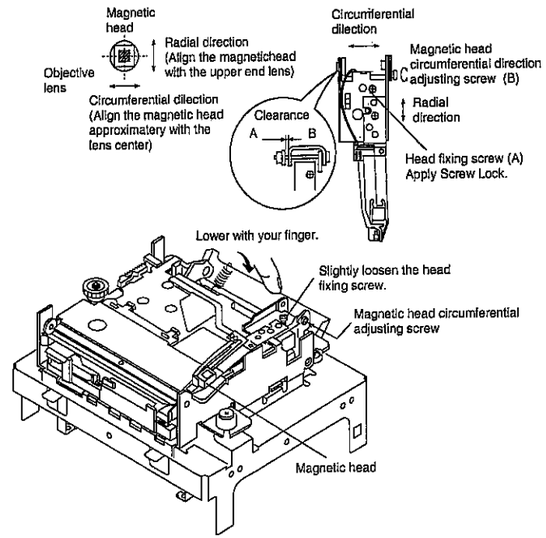

Magnetic head
Radial direction (Align the magnetichead with the upper end lens)
Objective lens
Circumferential diection (Align the magnetic head approximatery with the lens center)
Circumferential diection
Magnetic head circumferential direction adjusting screw (B)
Clearance
A
B
Radial direction
Head fixing screw (A) Apply Screw Lock.
Lower with your finger.
Slightly loosen the head fixing screw.
Magnetic head circumferential adjusting screw
Magnetic head

Figure 17-1

● Mechanism Adjustment

1. Optical pickup grating inspecting method

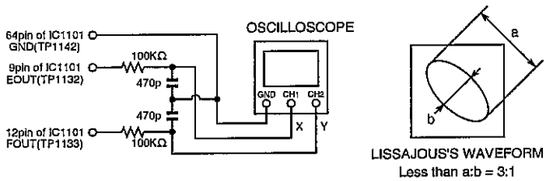


Figure 17-2 OPTICAL PICKUP GRATING DEVIATION MEASURING METHOD

After the automatic adjustment is performed in the AUTO mode (test mode) with the aid of high refection MD disc ("COMPLATE" is displayed), the Lissajous's waveform (x-y) is adjusted.

1. Slightly loosen the 3 screws of spin motor, and make an adjustment, observing the Lissajous's wavefor.
2. After adjustment tighten the screws in arder of<1> , <2> ,< 3> .

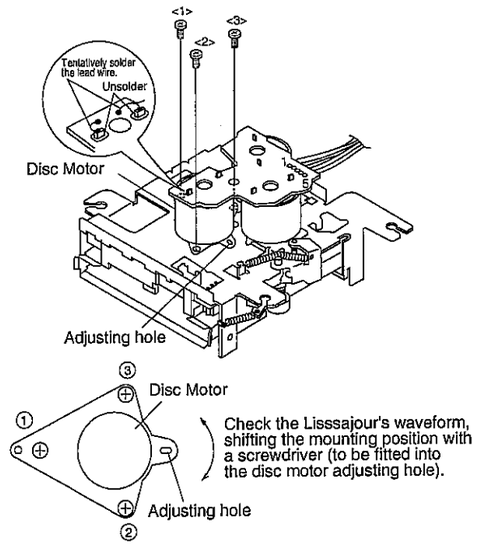


Figure 17-3

2. Jitter adjustment and checking method

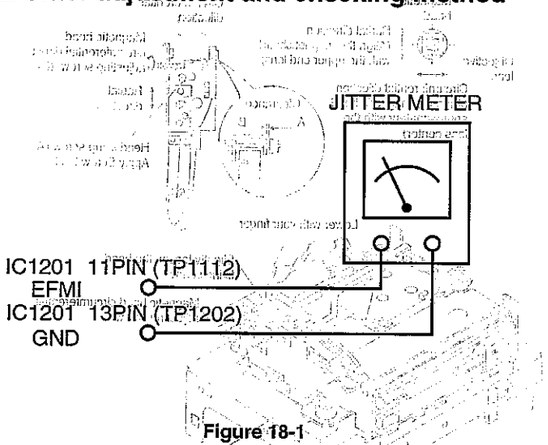


Figure 18-1

After performing the automatic adjustment in AUTO mode of test mode, using the low reflection MD disc set the jitter to the best point by adjusting the FB (focus balance) VR1110 on the main PWB. At this time jitter must be 32 ns or less.

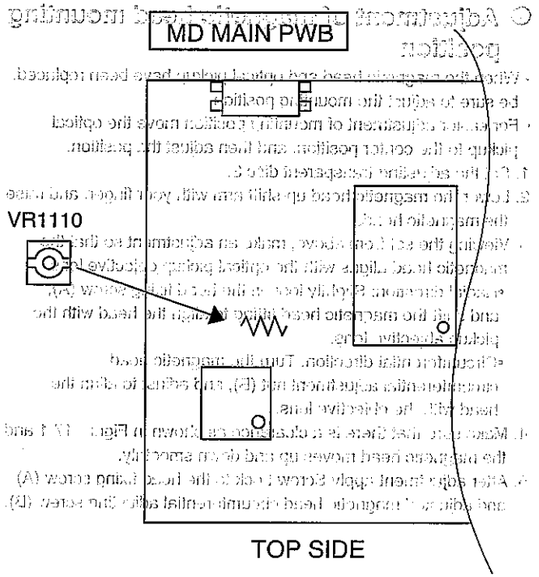


Figure 18-2

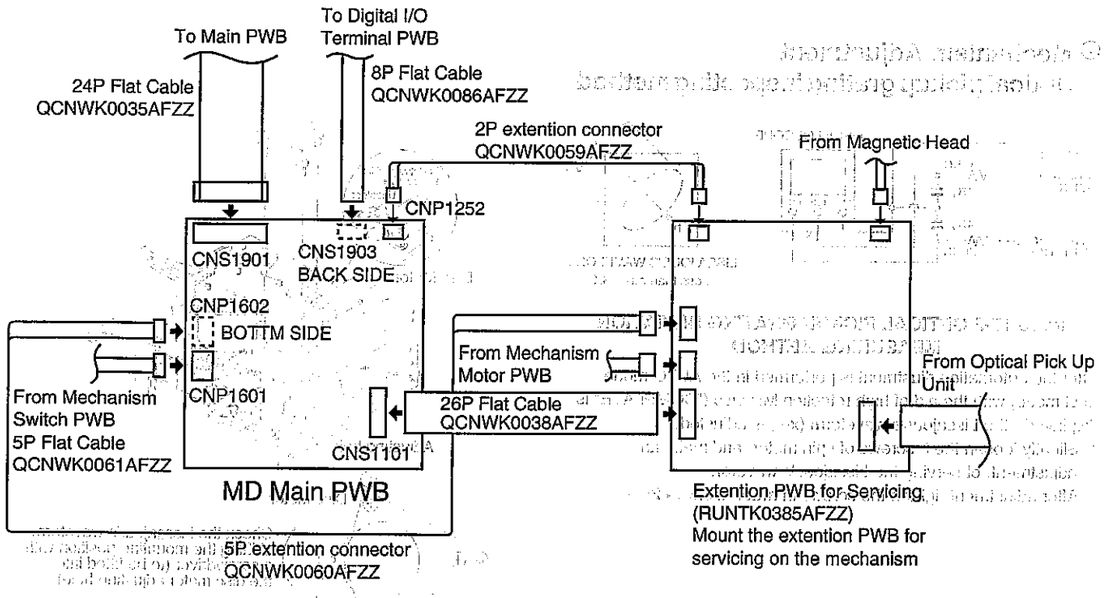


Figure 18-3

IC1301 VHiLR376411-1 (LR376411):ATRAC Companding (1/2)

Pin No.	Terminal Name	Input/Output	Function	
1	ADDATA	Input	AD data input	Audio data input
2*	DADATA	Output	DA data output	Audio data output
3	LRCK	Input	L/R clock	L-ch/R-ch selection clock
4	DSHIFT	Input	Data shift clock	DA data shift clock
5	RESET	Input	Reset input	LSI reset input "0": Reset
6	QENDC	Input	Selection for ENDEC	Setting to "1" when LR3768 is used as ENDEC
7	DADDATA	Input/Output	DA/AD data input/output	Audio data input/output
8	XMCKI	Input	Master clock input	16.9344MHz
9	TEST1	Input	Test terminal	Usually "0" is input
10	TEST0	Input	Test terminal	Usually "0" is input
11	SGDATI	Input	SG data input	SG data serial input terminal
12	VCC	—	Power supply	Power terminal
13	GND	—	Ground	Ground terminal
14	SGDATO	Output	SG data output	Serial output terminal for SG data
15	SGSHIFT	Input	SG data shift clock	
16	SGRQT	Input/Output	SG data request	SG data transfer request signal
17	SGFLG	Input	SG data error flag	SG data error flag input (0: Correct, 1: Error)
18	SGDATIO	Input/Output	SG data input	SG data serial input/output
19	SGLAT	Input	SG data latch signal	Latch clock input terminal for every 8 bits of SG data
20	MCRD	Input	Microcomputer read signal	
21	MCWR	Input	Microcomputer write signal	Register write signal (write on raise)
22	MCRS	Input	Microcomputer register selection	1: address register selection 0: data register selection
23	MCD7	Input/Output	Microcomputer data bus	Microcomputer input/output data bus
24	MCD6	Input/Output		
25	MCD5	Input/Output		
26	MCD4	Input/Output		
27	MCD3	Input/Output		
28	MCD2	Input/Output		
29	MCD1	Input/Output		
30	MCD0	Input/Output		
31*	MCO07	Output	Microcomputer extension output port 0	
32*	MCO06	Output		
33*	MCO05	Output		
34*	MCO04	Output		
35*	MCO03	Output		
36*	MCO02	Output		
37	VCC	—	Power supply	Power terminal
38	GND	—	Ground	Ground terminal
39*	MCO01	Output	Microcomputer extension output port 0	
40*	MCO00	Output		
41*	MCO17	Output	Microcomputer extension output port 1	
42*	MCO16	Output		
43*	MCO15	Output		
44*	MCO14	Output		
45*	MCO13	Output		
46*	MCO12	Output		
47*	MCO11	Output		
48*	MCO10	Output		
49	IOTES1	Input	Test terminal	Usually "0" is input
50	IOTES0	Input	Test terminal	Usually "0" is input

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1202 RH-iX2474AFZZ (IX2474AF):4Mbit D-RAM

Pin No.	Terminal Name	Input/Output	Function
1	I/O 1/DQ0	Input/Output	Data input/output
2	I/O 2/DQ1	Input/Output	Data input/output
3	$\overline{WE}$	Input	Write enable signal input
4	$\overline{RAS}$	Input	Low address strobe signal input
5	A9	Input	Address input
6	A0	Input	Address input
7	A1	Input	Address input
8	A2	Input	Address input
9	A3	Input	Address input
10	VCC	—	Power terminal (3.3V)
11	A4	Input	Address input
12	A5	Input	Address input
13	A6	Input	Address input
14	A7	Input	Address input
15	A8	Input	Address input
16	$\overline{OE}$	Input	Output enable signal input
17	$\overline{CAS}$	Input	Column address strobe signal input
18	I/O 3/DQ2	Input/Output	Data input/output
19	I/O 4/DQ3	Input/Output	Data input/output
20	GND/VSS	–	Ground terminal

EXPLANATION OF ERROR DISPLAY

Error display	Errors	Corrective action
Can't REC	• Defect occurred 10 times successively during REC-PLAY. • Due to occurrence of defect during REC-PLAY the recordenable cluster became zero.	• Check that disc is free from flaws, dust, fingerprint, black spots, etc. Check for significant disalignment and runout of disc.
Can't COPY	• The following judgment was made based on the channel status of digital signal which was input from D-IN during (1) Other than audio uses (2) Other than home-uses (3) Check whether the D-IN input source is copy-inhibited CD.	• Failure of copy from CD due to inversion of COPY bit.
Din UNLOCK	• The following result was obtained with respect to the digital signal input from D-IN during REC-PAUSE or REC-PLAY. (1) PLL of digital IN was unlocked.	• Check for troubles in D-IN signal line.
TOC FULL	• During REC-PLAY the recording area was completely filled with data so that there is no area to register music and character information (music name and disc name). • When an attempt to enter REC-PAUSE or DIVIDE mode or to write the character information was made, the UTOC writing area was full of data.	• Replace disc with a recording disc having an area to register UTOC. • Replace disc with another record/playback disc having a sufficient area to write UTOC.
UTOC ERR R	• FTNO > LTNO • FTNO ≠ 0 or 1 • UTOC record on disc could not be read.	• UTOC data has error. Replace disc with another disc.
UTOC ERR A	• Start address > End address	• UTOC data has error. Replace disc with another disc.
UTOC ERR L0~4	• Data of UTOC 0 to 4 was looped.	• UTOC data has error. Replace disc with another disc.
NOT AUDIO	• Nonaudio data was recorded in the track mode of TNO which is currently selected.	• Select another TNO or replace the disc.
? DISC	• "MINI" data of system ID written with ASCII code in TOC is not correct. • The disc type written in TOC is not for premastered MD, recording MD or hybrid MD.	• The disc is nonstandard disc. Replace disc with another disc, and check.
DISC FULL	• When an attempt to set REC-PAUSE was made, there was no record-enable area in the disc.	• Replace the disc with another record disc having record-enable area.
PLAYBACK MD	• An attempt to set REC-PAUSE or to edit was made on the playback-only disc.	• Replace the playback-only disc with record disc.
PROTECTED	• An attempt to record or edit was made on the record/playback disc whose safety lug has been set to careless protected. Redo on another track.	• Release the safety lug, and try again.
Can't EDIT	• The specific editing conditions were not satisfied in editing.	• Operation procedure is not proper. Redo, following the correct operation procedure. • Attempt to edit, changing the place.
TEMP OVER	• Temperature in the set rose excessively due to occurrence of some trouble.	• Check whether the MD unit was used in hot place.
MECHA ERR 1	• When the ejection operation was made, the ejection completion position was not reched.	• Once turn off the power supply, and redo. • Check the signal line to the mechanism or loading motor.
MECHA ERR 2	• When the head-up operation was made, the load completion position was not reched.	
MECHA ERR 3	• When the head-down operation was made, the head-down position was not reched.	
DISC ERR RD PA WR	• The read data was not correct or data could not be read correctly. • An error occurred during recording of music data, and it could not be recorded correctly.	• TOC or UTOC data contain error or disc has flaw. Replace the disc.
TOC ERR S TOC ERR R TOC ERR T	• The read TOC data was not correct. • An attempt to read TOC was made, but it could not be read.	• The TOC information recorded on the disc does not conform to the MD standard. Replace the disc. • The disc has flaw. Replace the disc.

Error display	Errors	Corrective action
UTOC W ERROR	• An error occured during UTOC rewriting, so that UTOC could not be rewritten corrctly.	• The disc has flaw. Replace the disc.
FOCUS ERROR	• When the disc was loading, the focus could not be set.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.
BLANK MD	• When UTOC was read, it was found that total TNO and the number of characters of NAME was 0.	• Check whether the disc is recordable one by preforming recording.
DEFECT	• Focus retract error occurred due to shock during REC-PLAY.	• Check that the disc is free form flaw, dust, fingerprint and black spot. Check that the disc does not have significant disalignment or run-out.

EXPLANATION OF MECHANISM ERROR

Error display	Errors
MECHA_ERR1_* MECHA_ERR2_* MECHA_ERR3_*	Ejection is not completed. Head-up is not completed. Head-down position 1.3 to 1.853V

HINF (IC1401 ④ PIN)

* = E Ejection completed position < 1.3 V
* = M Horizontal midway position > 3.06 V
* = L Load-completed position 1.853 ~ 2.48 V
* = D Head-down position 1.3 ~ 1.853 V

IC1201 VHiLR37644/-1 (LR37644):Encoder Decoder (2/2)

Pin No.	Terminal Name	Input/Output	Function
51	RAA8	Output	Address output ADR8 to external D-RAM
52	RAA9	Output	Address output ADR9 to external D-RAM
53	TEST0	Input	Input for test. Usually connect to GND to use.
54	TEST1	Input	Input for test. Usually connect to GND to use.
55*	C2PO	Output	Flag monitor output after C2 error correction
56*	ACRCER	Output	CRC error flag monitor output of ADIP
57	DIN	Input	Digital input signal
58	DOOUT	Output	Digital output signal
59	X1I	Input	Oscillation circuit input 33.8688MHz
60	X1O	Output	Oscillation circuit output 33.8688MHz
61	BCLK	Output	Music data shift clock
62	VDD1	—	Digital power terminal
63	DGND	—	Digital ground terminal
64	LRCK	Output	Music data L-ch/R-ch selection output
65	DFCK	Output	Clock 256 Fs for AD/DA converter digital filter
66	ADDATA	Input	Audio data input
67	DADATA	Output	Audio data output
68	X16MO	Output	Clock 16.9344MHz
69	SGLAT	Output	Compressed data latch clock
70	SGDAT	Input/Output	Compressed data input in record mode Compressed data output in playback mode
71	SGFLG	Output	Compressed data error flag output in playback mode
72	SGRQT	Input	Compressed data request signal
73	SGSHIFT	Output	Compressed data bit clock
74	DADDATA	Input/Output	Music data output in record mode Music data input in playback mode
75	ATBCLK	Output	Music data shift clock
76	ATLRCK	Output	Music data L-ch/R-ch selection output
77	X176KO	Output	Clock output f=175.4kHz (4 fs)
78	FODRF	Output	Focus servo forward output PWM
79	FODRR	Output	Focus servo reverse output PWM
80	TRDRF	Output	Tracking servo forward output PWM
81	TRDRR	Output	Tracking servo reverse output PWM
82	SLDRF	Output	Slide servo forward output PWM
83	SLDRR	Output	Slide servo reverse output PWM
84	SPDRF	Output	Slide servo forward output or spindle servo output PWM
85	SPDRP	Output	Slide servo reverse output or spindle rotation forward/reverse selection
86	EFMO	Output	EFM signal output in record mode. CIF (CI error flag) monitor output in playback mode.
87	VDD1	—	Digital power terminal
88	DGND	—	Digital ground terminal
89	AGAIN	Analog Output	A amp. gain adjustment output of RF LSI
90	AGAINS	Analog Output	A amp. gain selection output of RF LSI (High refrection <-> Low refrection)
91	BGAIN	Analog Output	B amp. gain adjustment output of RF LSI
92	BGAINS	Analog Output	B amp. gain selection output of RF LSI (High refrection <-> Low refrection)
93	EGAIN	Analog Output	E amp. gain adjustment output of RF LSI
94	EGAINS	Analog Output	E amp. gain selection output of RF LSI (High refrection <-> Low refrection)
95	FGAIN	Analog Output	F amp. gain adjustment output of RF LSI
96	FGAINS	Analog Output	F amp. gain selection output of RF LSI (High refrection <-> Low refrection)
97*	FBAL	Analog Output	Balance adjustment for focus error
98	TBAL	Analog Output	Balance adjustment for tracking error
99	TCGAIN	Analog Output	Gain adjustment output of tracking cross detecting amp.
100	VREF	Analog Output	Reference Voltage of RF LSI

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.